

Hamilton Canal

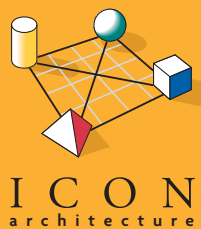
District *Master Plan*

A Vision — Renewed



September 2008

TRINITY
FINANCIAL





Credits and Acknowledgements



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CREDITS AND ACKNOWLEDGEMENTS

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is the product of a public-private
partnership led by Trinity Hamilton
Canal Limited Partnership and the
City of Lowell.**

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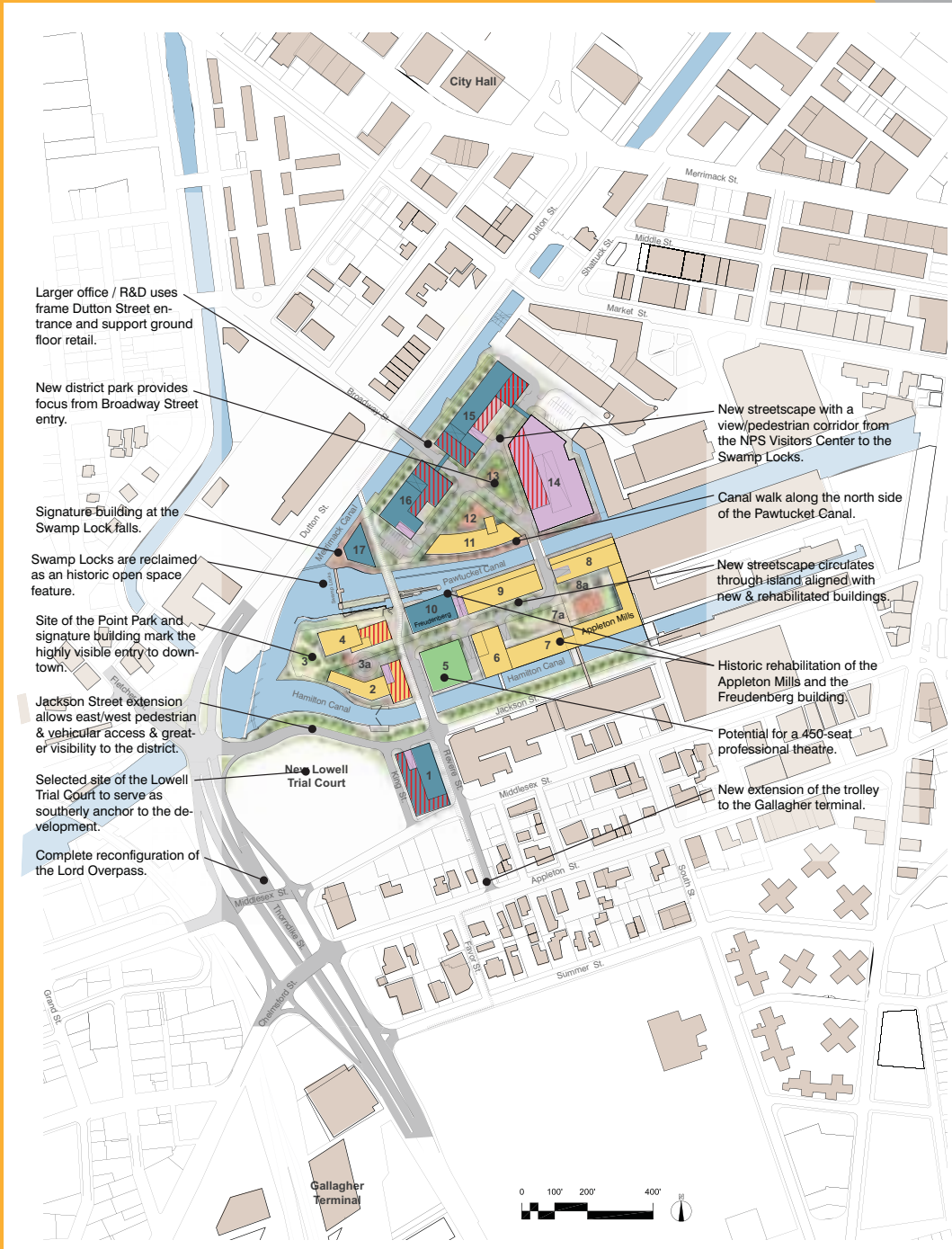
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EXECUTIVE SUMMARY

In June 2006, the City of Lowell issued a solicitation for a master developer to design, re-zone, market, and redevelop the Hamilton Canal District (HCD). After an extensive qualification process, the Trinity Hamilton Canal Limited Partnership (Trinity) team was selected by the City to become the Master Developer of the site.



Beginning in December, 2007 Trinity and City staff collaborated on a 9-month, public master planning process of well attended “charrettes” including listening sessions, design sessions and numerous working groups. The process has produced this transit-oriented, mixed-use Master Plan that will ultimately produce tax revenues approaching \$4 million per year, strengthen and diversify the existing downtown market, and create significant employment opportunities. It has the potential to create up to 425,000 SF of commercial / office space, up to 55,000 SF of retail space, and up to 725 units of market rate and affordable housing. This level of redevelopment activity will represent up to \$800 million in total development costs and has a goal of producing 400 permanent full time jobs.

The most significant urban planning features of this project include:

■ Use of the southeast corner of the HCD as the site for the new, \$175 million Lowell Trial Court

■ Use of the National Park Service (NPS) parking lots as taxable commercial land to create a primary entrance to the HCD off Dutton Street at Broadway

■ The development of strong pedestrian connections to the downtown core, the JAM neighborhood, the Gallagher Terminal, the Acre neighborhood, and the proposed extensions of the NPS canal walk system along the Western Canal and the Upper Pawtucket Canal

■ The development of additional canal walks along the Lower Pawtucket Canal and the Hamilton Canal along with new public open space at the point south east of the Swamp Locks Falls

■ The first phase of the project will include the historic rehabilitation of the remaining Appleton Mill buildings and the historic rehabilitation of the Freudenberg building

■ With the development of up to 1.6 million SF of new mixed-use contemporary buildings including a signature high rise building south of the Swamp Locks Falls, the HCD will create a new image for the future of Lowell as a renewed regional center of culture and commerce

■ The traffic impacts of the full build out of the HCD have been carefully examined, discussed in numerous public working group meetings, and proposed solutions have been fully embraced by the community. The mitigation measures are numerous and detailed in this Master Plan, but the two most significant

traffic interventions include the extension of Jackson Street east to Fletcher Street across Dutton Street and the reconfiguration of the Lord Overpass so that it will be able to handle the predicted traffic increases much better than it currently handles the existing traffic.

■ A route for an extended trolley system has been designed through the HCD to accommodate the trolley’s connection to the Gallagher Terminal. In addition, the charrette process has renewed public interest in the possibility of transforming the existing historic trolley into a viable, modern streetcar system linking the Gallagher Terminal through the HCD to Downtown, the Tsongas Arena, LeLacheur Park and both the UMass Lowell and Middlesex Community College campuses –transforming the entire core of Lowell into a transit-oriented development opportunity. The Lowell Plan has recently established a sub-committee to carry out the next level of feasibility studies.

As described in the City’s Request for Qualifications, the Hamilton Canal District is an opportunity “on a scale paralleled only by the City’s founding, and the creation of the Lowell National Historical Park.” This Master Plan has been formulated with tremendous public input and support to ensure that the potential of this opportunity is realized.

[1 INTRODUCTION]

SITE INTRODUCTION



Settled in 1653,

Lowell flourished from its founding through the 1880s, led by visionary merchants who saw enormous potential in harnessing the water power of the Pawtucket Falls for manufacturing. Francis Cabot Lowell, the City's namesake, built a leading-edge manufacturing complex woven among the world's most extensive waterpower system at that time, which drew both entrepreneurs and immigrants to the growing city. By the turn of the 20th century, however, competition in other New England communities had begun to limit Lowell's continued expansion. Mill owners stopped investing, which led to a decline in business and prosperity that continued through the late 19th and much of the 20th centuries.

The mills and canals, however, were built to last. In the early 1970s a collaboration of political, business and education leaders, working with urban planners and historians, devised a strategy to revitalize the City based on its architectural and cultural heritage. Creation of the Lowell Heritage State Park in 1974, followed by the Lowell National Historical Park and Lowell Historic Preservation Commission in 1978 led to the development and implementation of the City's first Preservation Plan, transforming Lowell from a decaying industrial canal city into a

“living history” venue that has new economic vitality and world-wide renown.” Public and private investments have adaptively reused the historic mills for new uses, and major rehabilitation projects have been completed throughout the Downtown. The unique canal system has been preserved and interpretive projects are located throughout the City. Creation of the Downtown Lowell Arts District in 1998 spurred a development renaissance for the arts and cultural institutions. A minor league baseball team and park, a new indoor civic arena, a professional regional theater company and numerous restaurant and arts venues have emerged. Lowell has invested hundreds of millions dollars of public and private funds in redevelopment and now attracts over 650,000 visitors per year.



The 13-acre Hamilton Canal District (HCD) sits directly adjacent to this revitalized downtown, the Jackson / Appleton / Middlesex (JAM) neighborhood, the Thorndike / Dutton Street entry corridor to the City, and is roughly three blocks from the Gallagher Transportation Terminal. The HCD is a critical part of the Jackson / Appleton / Middlesex Urban Renewal Plan (JAM Plan) and for many years was seen as an opportunity for retaining or re-creating an industrial district with the attendant manufacturing jobs. In fact, the HCD had re-invented itself many times over from the beginning of the 20th century and was home to several viable contemporary manufacturing companies. In 2003, with the closing of Freudenberg Nonwovens and Joan Fabrics, the City recognized that the HCD was not going to be able to fulfill this role and that the future of the HCD had to be re-imagined or it would remain only a detriment to the JAM neighborhood and the Downtown.

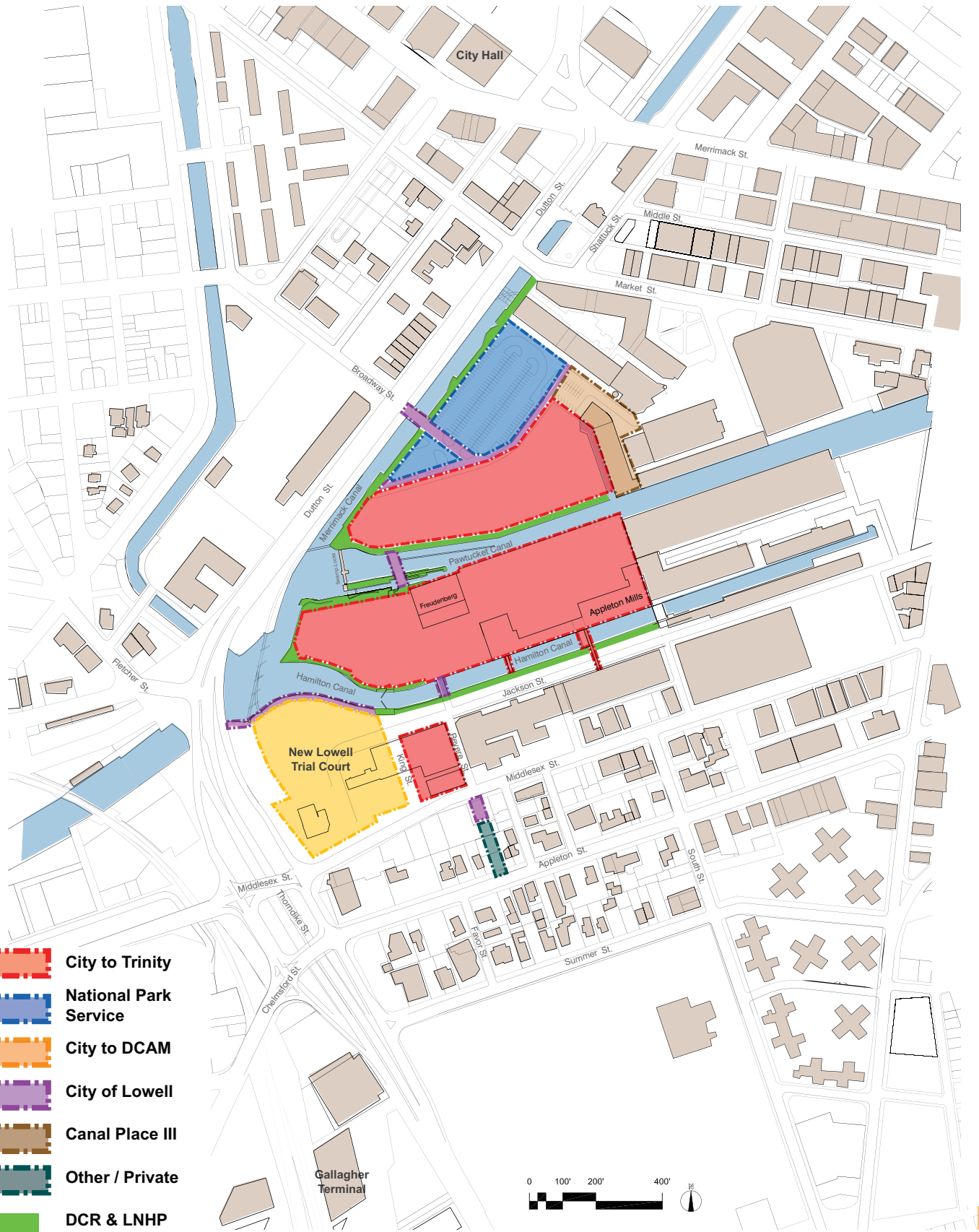
The City determined that it could not rely on private investment alone to tackle the redevelopment of the HCD. The City assembled the various parcels of land and buildings and then cleared all of the late 20th century industrial buildings leaving only the structures of potential historic value. The City then prepared and advertised a Request for Qualifications (RFQ) for developers. In the RFQ the City described the HCD as an opportunity, “on a scale paralleled only by the City’s founding, and the creation of the Lowell National Historical Park.”

Following an extensive process of receiving and evaluating conceptual and financial proposals, requesting additional submittals, interviews, and tours of potential developers’ completed projects, the City selected Trinity Hamilton Canal Limited Partnership (Trinity) as the Master Developer for the District.

EXISTING CONDITIONS

The Hamilton Canal District centers on the confluence of three canals: the Hamilton, Merrimack, and Pawtucket Canals and is bounded by the Lowell National Historical Park Visitor Center to the north, Middlesex Street and Jackson Street to the south, Dutton Street to the west, and Revere Street on the southeast.

The HCD is adjacent to the **heart of Lowell's downtown** and is surrounded by the system of canals that distinguish the City. It includes lands that are divided into three sections by the Pawtucket and Hamilton Canals. Approximately 3.8 acres of vacant land is located north of the Pawtucket Canal. Approximately 6.5 acres of land is located between the Pawtucket and Hamilton Canals that is surrounded by water, historic mill buildings and the Swamp Locks. The area south of the Hamilton Canal includes approximately 0.65 acres of land and is located at the corner of Jackson and Revere Streets. In addition, this Master Plan has extended the District to include the 2.2-acre National Park Service Visitor Center parking lot adjacent to the Merrimack Canal, accessed by the bridge aligned with Broadway. The Visitor Center is accessed via an opening in the Market Mills building to the northeast and this opening is an important connection between the HCD and Downtown.





The 13-acre project site

is comprised of land that has remained underutilized or underdeveloped for years. The Lower Pawtucket and Hamilton Canals divide the site into three sections. The canals themselves are privately owned, dating back to the Industrial Revolution, but recreational rights and the canal-side land in the HCD are public resources owned by the Commonwealth of Massachusetts. These have been reserved for canal walks that have been included in this Master Plan. There are three active bridges over the canals within the District. The one over the Merrimack Canal at Broadway is relatively new and in good condition. Both the bridge over the Hamilton Canal that aligns with the northern end of Revere Street and the bridge that crosses the Lower Pawtucket Canal in the same alignment, just east of the Swamp Locks Falls, are in very poor structural condition and can only be of limited use in the first phase of development. Just above the Falls, the NPS maintains its docking facilities for its canal boat tours. Currently the historic trolley, operated by the NPS, brings tourists to the canal boat docks, terminating slightly west on the north side of the Merrimack Canal.

Within the Hamilton Canal District at the southwestern-most end, and adjacent to the project site, is the site of the proposed Lowell Trial Court. The Department of Capital Asset Management will develop the Lowell Trial Court. The proposed building will be a comprehensive justice center containing sixteen courtrooms serving the Superior Court, District Court, Juvenile Court, Housing Court, and Probate and Family Court.



The HCD is located within the boundaries of three historic districts: the Lowell National Historical Park and Preservation District, the Downtown Lowell Historic District, and the Locks and Canals Historic District. Two of Lowell's most significant 19th century manufacturers, the Lowell Machine Shop and the Appleton Manufacturing Company, housed their manufacturing properties in this area. Three of the Appleton Mill buildings remain along the north edge of the Hamilton Canal. They are a state of serious disrepair, but can be rehabilitated. In addition there are the remnant walls of two other mill structures along the south edge of the Lower Pawtucket Canal. These can be saved as remnants and integrated into new buildings. Also of significant relevance is the Saco-Lowell Shops building #14 currently known as the Freudenberg building on the south side of the Lower Pawtucket Canal, just east of the lock chambers. This is an early 20th century concrete frame structure that is in reasonably good condition and can be historically restored without much difficulty. The site is contiguous to the successfully restored Canal Place Condominiums to the northeast and the Market Mills to the north.



Within the project site, there are several ownership entities. Owners include the City of Lowell, the Lowell National Historical Park, and the Commonwealth of Massachusetts (Division of Conservation and Recreation). The Master Planning process has engaged each entity to create the most vibrant, efficient, publicly accessible urban design plan for the HCD. It is anticipated that the City of Lowell will engage the Lowell National Historical Park in a disposition process for the existing parking lots along Dutton Street. Creation of a street network and pedestrian routes will involve use of some portions of DCR property.



PROJECT GOALS

In its Request for Qualifications, the City established the following project goals that have been used as guidelines during the development of this Master Plan. For the duration of the development, these Project Goals will continue to be an important tool for measuring the project's success. In addition, they will be used by the City as the standards for evaluating any future proposed changes to this Master Plan or Special Permit / Variance applications filed under the Form Based Zoning Code that will govern the Hamilton Canal District.

[A] Develop an exciting new extension of Downtown Lowell to support new local residents and employees.

[B] Provide a viable, safe and comfortable pedestrian experience that links the Gallagher Terminal to Downtown Lowell.

[C] Develop a new signature site that draws off the successful loft reconstruction downtown, while including a variety of old and new buildings that will complement the existing historic fabric.

[D] Successfully develop a residential component that appeals to consumers seeking an urban experience with access to Downtown Lowell, rail access to Boston or highway access to the Route 3 and Interstate 495 corridors.

[E] Create a new place that respects the urban character of the City with buildings that meet the sidewalks and active first-floor uses.

[F] Acknowledge and reflect the historic canals as a significant amenity which is integral to the Development Site.

[G] Continue progress to make this area of the City even safer, by creating an active street presence, and encouraging a significant population who will provide 'eyes on the street' during both day and evening hours.

[H] Support significant pedestrian amenities including upgrades to streets, sidewalks, street trees and lighting.

[I] Develop sites around the canal walks that will make the walkways more inviting and interesting, while also creating origins and destinations along the walkways.

[J] Significantly increase the City's employment base and tax revenues from the Development Site.

[K] Integrate the Project with related planning and development initiatives and/or projects in the area including the upgrading of Middlesex Street, improvement of pedestrian connections to the Gallagher Terminal, the development of the canal walks, as well as the proposed expansion of transit to support downtown circulation.

[L] Incorporate planning for energy efficiency and sustainability in the redevelopment of the Development Site, including, where feasible, the use of renewable energy sources, green building construction and operational standards.

[2 DEVELOPMENT VISIONING PROCESS]

As part of the master planning and disposition process, the City of Lowell and Trinity organized an extensive public planning process using a series of planning charrettes. The charrette process was intended to be a dynamic exercise that included base-line information gathering, significant stakeholder involvement, and public review and comment to maximize the opportunity for public input. The goal was for the outcome of the process to reflect a consensus among the participant stakeholders that their concerns had been considered and integrated within the Master Plan.

Upon designation in the Fall of 2007, Trinity began an informal outreach to stakeholders in the community in order to understand the various perspectives regarding the site. This outreach targeted neighborhood groups, local community based organizations, City and State representatives, the National Park Service, the Massachusetts Division of Capital Asset Management, the University of Massachusetts-Lowell, the media, individuals, businesses, abutters and others. Trinity and the City then commenced the planning of five major public charrettes, branded as the "Vision Sessions." The Vision Sessions were advertised in the Lowell Sun, on the City of Lowell's website, the Hamilton Canal District website and posted at locations throughout the City. Trinity and the city also held approximately twenty smaller "Working Group Sessions." Working Group Sessions were held in between the Vision Sessions and addressed specific concerns or issues dealing with the project plan. A summary of the Vision Sessions and Working Group sessions is as follows:

Vision Session One- Listening Session

December 5, 2007, 6pm-9pm, Lowell Memorial Auditorium

Attendance: Over 95 individuals

Vision Session One commenced by introducing the development team, the project area, and the City's goals for the project. The goal of this session was to learn from the community the important issues related to the Hamilton Canal District. Throughout the session, the team listened to the community's thoughts, suggestions, and concerns about the site.

Suggestions from the community included:

- The desire for an artist component to the site and the need for affordable artist housing
- The desire for a strong commercial component to the site
- The need to enhance pedestrian connections through the site and to the Gallagher Transportation Terminal and to improve existing traffic conditions
- The desire to focus on sustainable design
- The desire for more contemporary architecture
- The desire to integrate the Downtown with the Lower Highlands and Acre neighborhoods, potentially with an extension of Fletcher Street to Jackson Street
- The desire to create a retail environment that will not negatively impact existing businesses



The major themes that continually resonated throughout the first session were based on the following topics: Traffic, Arts and Urban Design, Downtown Connections, and Gentrification. In order to explore these issues in greater detail, the first Working Groups were formed and met on these issues later in the same month.



Vision Session Two- Presentation of Two Site Concepts

January 5, 2008, 10am-3pm, Lowell Memorial Auditorium

Attendance: Over 85 individuals

Vision Session Two began with an explanation by the City of the charrette goals, the master planning process and the principles of a form-based zoning code. It also included a presentation by the Massachusetts Division of Capital Asset Management on the alternatives for the Lowell Trial Court. Based upon Trinity's initial submission to the City of Lowell's Request for Proposals and the community feedback from Vision Session One, ICON architecture then presented two potential alternative concepts for the site. For the majority of the Session, attendees broke into six different working groups and studied the concepts. After the breakout sessions, the groups provided feedback on the two concepts. Participants preferred the concept that included the following elements:

- A new streetscape that circulated through the site, as it encouraged the connection between the site and Downtown.
- A trolley running through the site, as it activated the site and avoid creating further barriers from adjacent neighborhoods.
- An extension of Jackson Street that allowed east/west pedestrian and vehicular access, as it provided greater visibility and connection to the District.

The participants also communicated a number of concepts to improve the plan. These concepts included:

- A building configuration on The Point that allowed access to the green space and the canals
- The importance of adequate parking, including on street parking, structured on-site parking and the need to utilize the Early Garage.

Vision Session Three- Presentation of Development Plan and Program

March 15, 2008 10am-1pm, Lowell Memorial Auditorium

Attendance: Over 50 individuals



Vision Session Three commenced with a review of the community feedback from the previous session and the comments received via emails and the HCD website. Trinity communicated its process in formulating a program and how the need for a significant commercial component dictated the parking requirements for the site. ICON architecture presented the plan, based on the feedback from the previous two Vision Sessions, that would be submitted as part of the Expanded Environmental Notification Form for the state Massachusetts Environmental Policy Act (MEPA) permitting process. Woodland Design Group communicated the traffic plan for the site, as broken down into Phase I traffic improvements and the full build-out traffic improvements.

A number of issues necessitating further study came out of Vision Session Three including: the proposed traffic design changes and the proposed placement of the on-site parking garage.

Vision Session Four- Presentation of Form Based Code

May 29, 2008 6pm-9pm Lowell Senior Center

Attendance: Over 40 individuals

Vision Session Four commenced with a review of the concept plan for the site and an update on the outstanding issues (traffic and parking garage placement) that were under further study in the Working Groups.

A representative from the Executive Office of Environmental Affairs attended the Session and discussed the MEPA process and the opportunities for public comment on the proposed plan. A representative from the Division of Capital Asset Management also attended the Session and gave an update on the status of the Lowell Trial Court.

HAMILTON CANAL DISTRICT VISION SESSION IV	
May 29, 2008	6:00PM - 9:00PM
6:00	LIGHT REFRESHMENTS SERVED
6:10	WELCOME Abby Goldenfarb, Trinity Adam Baacke, City of Lowell DPD
6:20	REVIEW of CONCEPT PLAN Hank Keating, Trinity
6:30	QUESTIONS
6:40	ADMINISTRATION of FORM BASED CODE George Proakis, City of Lowell DPD
6:50	QUESTIONS
7:00	FORM BASED CODE- Regulatory Plan, Street Standards, Parcel and Building Form Standards, Open Space Standards Steve Heikin, ICON architecture, inc.
7:25	BREAK
7:50	QUESTIONS on FORM BASED CODE
8:20	Open Discussion of FUNCTIONAL DESIGN STANDARDS Hank Keating, Trinity
8:55	NEXT STEPS Abby Goldenfarb, Trinity Next Traffic Meeting: Wednesday, June 18th, 6-9pm Final Charrette: TBD
9:00	Adjourn

The City presented how the Form Based Code (FBC) would be administered. ICON architecture then presented the various components of the FBC, including the Regulatory Plan, Street Standards, Parcel and Building Form Standards, and Open Space Standards. A draft FBC was made available for comment and review. Discussion focused on the issues regarding pedestrian connections and the pedestrian experience through the HCD site from Downtown to the Gallagher Terminal and other neighborhoods. This discussion led to the re-examination of the Functional Design Standards in the FBC to ensure a quality pedestrian experience, and the formation of a Downtown Lowell pedestrian/walkability group to discuss (outside of the HCD process) pedestrian connections and amenities in Lowell.

Vision Session Five

will include the presentation of the final approved Master Plan and Form Based Code.



OLD WALLS. NEW POSSIBILITIES.

**Join the Vision Sessions
for the Hamilton Canal District**

Fifteen acres. \$500 million. Ten years. The ideas and plans we generate now will transform the Hamilton Canal District and redefine Downtown Lowell. We want your input. What makes a great neighborhood? What are your concerns? Share your ideas.

The City of Lowell and Trinity Financial, the master developer, invite you to five Vision Sessions.

Wednesday, December 5, 2007, Listening Session, 5:45 PM to 9 PM
– Wednesday, December 12, 2007, Working Group Meetings, 6 PM to 9 PM
– Thursday, December 13, 2007, Working Group Meetings, 6 PM to 9 PM
Saturday, January 5, 2008, Working Session, 10 AM to 3 PM
Saturday, March 15, 2008, Working Session, 10 AM to 3 PM
May 2008, Session to be scheduled
July 2008, Session to be scheduled

Lowell Memorial Auditorium • Third Floor – Veterans' Wing • 50 East Merrimack Street

Free parking in the Davidson Street parking lot. Everyone is welcome.
Please RSVP, 617-720-8400 or reception@trinityfinancial.com



Photo by James Higgins, www.jameshigginsphotography.com



The informal working group meetings allowed for smaller groups to explore specific issues with the development team and the City. A summary of the working groups is below.

Traffic Working Group

Meetings were held on December 12, 2007; May 7, 2008; May 21, 2008; June 18, 2008 and August 7, 2008.

The initial meetings of the Traffic Working Group focused on the importance of links to other neighborhoods, the potential expansion of the trolley system and the need for improved pedestrian connections throughout the site. Subsequent meetings focused on the initial proposed traffic plan for the site, and its impact on surrounding businesses. Proposed alterations to the Lord Overpass, notably the severing of the Middlesex Street section of the Lord Overpass and potential loss of parking on Appleton Street, sparked serious concerns in the community and led to the City's hiring of an independent traffic engineer, TEC, Inc. Collaboration between Woodland Design Group and TEC ultimately produced a revised conceptual design that restores both the parking spaces on Appleton Street and the Middlesex Street leg of the Lord Overpass.

Parking Garage Working Group

Meetings were held on May 13, 2008 and May 27, 2008.

The Parking Garage Working Group focused on the placement of the proposed parking garage on the site and its impact on the residents of Canal Place III. After an initial meeting with residents to hear their concerns, Trinity returned for a subsequent meeting to address their concerns and mitigate the visual and shadow impacts of the proposed parking garage. The revised parking garage design resulted in a commitment to providing a visually appealing green wall/roof system and a reconfigured massing that decreased the shadow impacts of the building.

Form Based Code Working Group

Meetings were held on May 1, 2008 and May 8, 2008.

The Form Based Code Working Group involved a review of the mechanics of the Form Based Code and the proposed designs for streets and buildings. The FBC Working Group benefitted by the attendance of a number of local architects, who contributed their expertise and local knowledge.

Downtown Connections Working Group

A meeting was held on December 12, 2007.

The Downtown Connections Working Group communicated the need for better signage, links between the University, Downtown, and the Gallagher Terminal and the importance of street connectivity. The participants also highlighted their concerns that the HCD not detract from the existing retail environment in the Downtown. To address the comments from this working group, the HCD will attempt to enhance the Downtown market by adding not only daytime office activity, but also more evening and weekend residential activity.

Gentrification Working Group

A meeting was held on December 18, 2007.

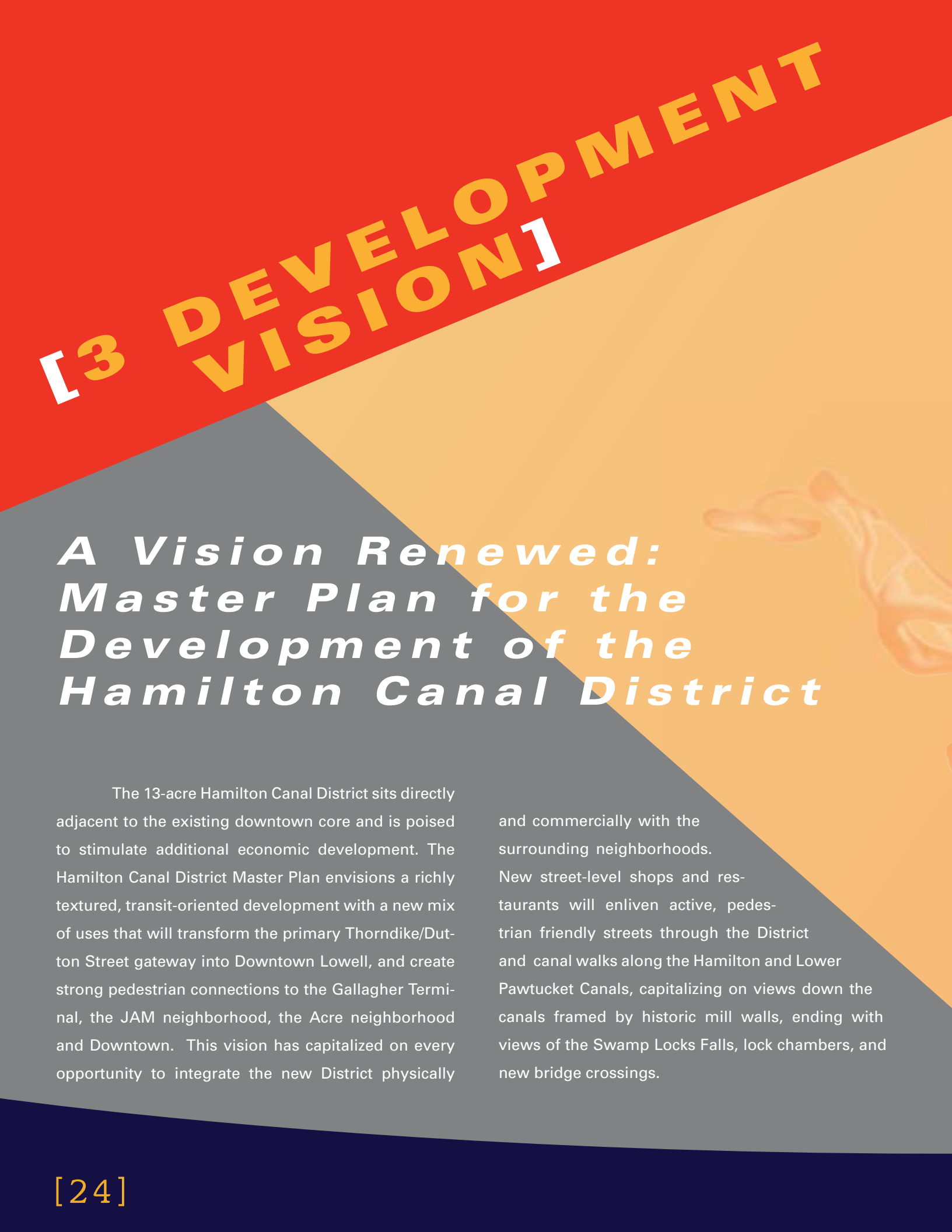
The Gentrification Working Group discussed the need to keep affordable housing, including artist housing, in the Hamilton Canal District and the desire to make housing available for local residents. To address the concerns of this group, the HCD will be designed with an affordable residential component.

Arts and Urban Design Working Group

A meeting was held on December 18, 2007.

The Arts and Urban Design Working Group discussed the quality of open space, the need for creativity in architecture, the need for the site to celebrate the arts. Subsequently, Trinity took a comprehensive tour of the Western Avenue Studios as a follow up to this working group. Recognizing the cultural relevance and the economic potential of the artist community, the HCD will attempt to include a significant arts component to the site.

By providing the opportunity for community input, not only in public Vision Sessions, but also in smaller, informal Working Groups, individuals were able to express their comments in a number of different settings. The opportunity for people to comment via email, letters, suggestion boxes, and the HCD website also allowed for additional feedback. As a result of the extensive public planning process, this Master Plan incorporates substantial local input, addresses specific needs of the community, and serves as a model of a successful public-private partnership.



[3 DEVELOPMENT VISION]

A Vision Renewed: Master Plan for the Development of the Hamilton Canal District

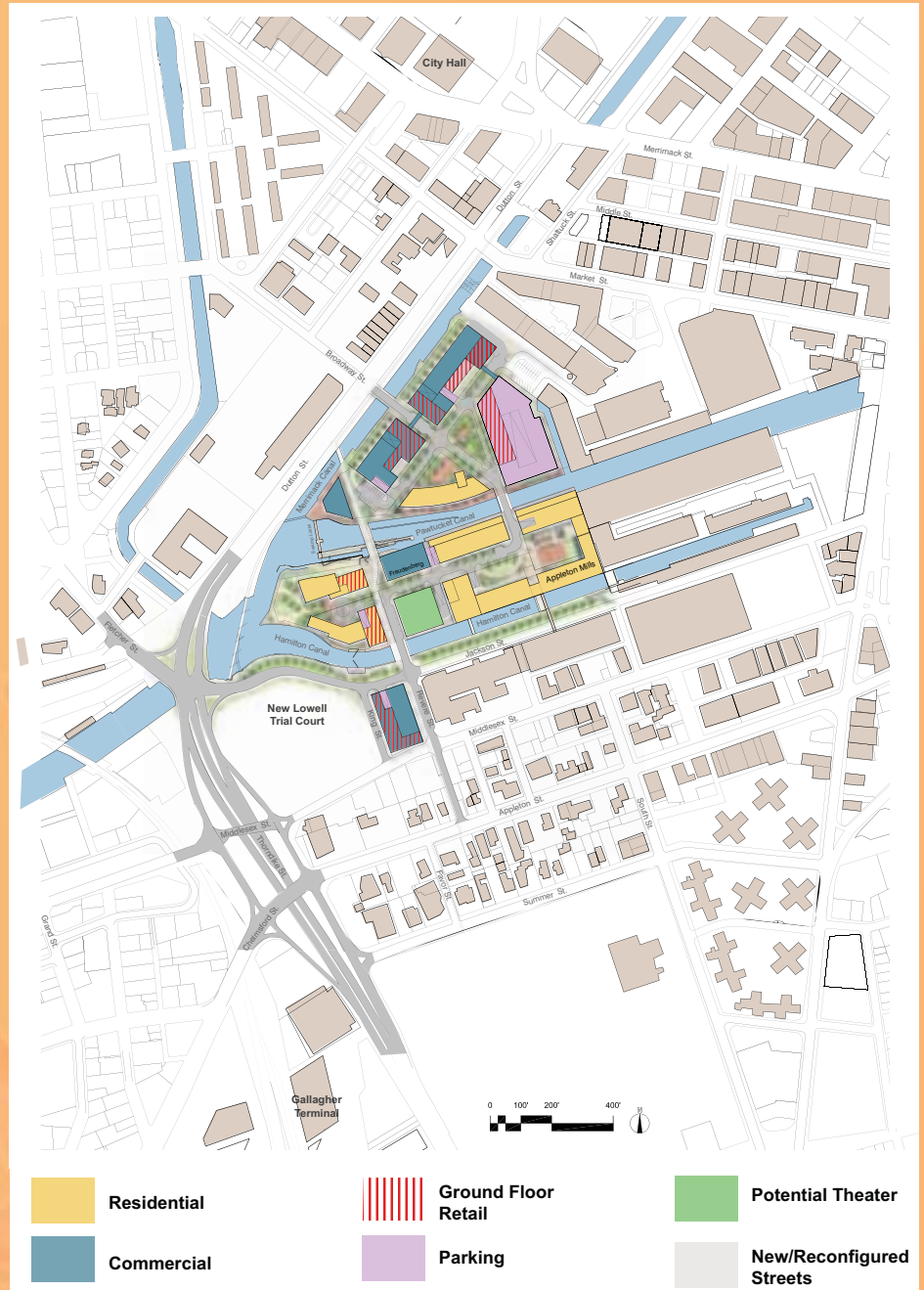
The 13-acre Hamilton Canal District sits directly adjacent to the existing downtown core and is poised to stimulate additional economic development. The Hamilton Canal District Master Plan envisions a richly textured, transit-oriented development with a new mix of uses that will transform the primary Thorndike/Dutton Street gateway into Downtown Lowell, and create strong pedestrian connections to the Gallagher Terminal, the JAM neighborhood, the Acre neighborhood and Downtown. This vision has capitalized on every opportunity to integrate the new District physically

and commercially with the surrounding neighborhoods. New street-level shops and restaurants will enliven active, pedestrian friendly streets through the District and canal walks along the Hamilton and Lower Pawtucket Canals, capitalizing on views down the canals framed by historic mill walls, ending with views of the Swamp Locks Falls, lock chambers, and new bridge crossings.

General Site Plan

Beginning with a vision for vibrant urban district directly connected to the neighborhoods surrounding it, the Master Plan, with the inclusion of the NPS parking lots, calls for eleven new buildings and the rehab of two existing buildings, ranging in height from 2 to 15 stories, to house a mix of uses: up to 725 new housing units, up to 425,000 gross square feet of commercial/office/research and development space, and up to 55,000 gross square feet of ground level retail shops. A combination of underground and above-ground parking facilities may create up to 1,800 parking spaces to support the new development. If the NPS parking lots are not included in the District, the Master Plan and program will be revised to produce a minimum of 175,000 gross square feet of commercial and retail space combined and a minimum of 500 housing units. In the spirit of transit-oriented development, the Master Plan also proposes expansion of the trolley system to facilitate transportation within the District and throughout downtown.

A new series of connections – both physical and visual – is the key design strategy for the site's development. Currently, the District is not only isolated from all the surrounding neighborhoods, but it functions as a barrier between the Downtown to the north and JAM neighborhood and the Gallagher Terminal to the south. The NPS parking lots currently cut off the remainder of the District from Dutton Street while the Thorndike/Dutton traffic corridor effectively blocks east-west pedestrian and vehicular connections to Fletcher Street.



The Master Plan calls for creation of new pedestrian and vehicular connections to and through the site from all directions, to ensure that the District functions as an important bridging neighborhood instead of a barrier.

Major new connections include:

From the South:

The extension of Revere Street north onto the Island and south to Appleton Street (including replacement of the existing bridge with one wide enough to accommodate cars, pedestrians and the trolley) will facilitate strong connections through the western end of the JAM neighborhood to the Gallagher Terminal. The importance of these connections to the Gallagher cannot be overstated – the District must become a home to commuters heading south



PROPOSED REVERE STREET BRIDGE ONTO ISLAND

as well as a home for new businesses with employees commuting north into the District and Downtown. The Pedestrian Connections to Surrounding Neighborhoods Plan on Page 41 and Figure 5-29 in Off-Site Improvement Plans illustrates the intersection improvements and primary pedestrian routes intended to improve access from the Gallagher Terminal.

The City of Lowell has been awarded a \$500,000 grant under the Commonwealth's TOD Infrastructure & Housing Support Grant program run by the Executive Office of Transportation. The grant covers the construction costs of improvements between the Gallagher Terminal and the HCD. Funds will be spent to improve the pedestrian conditions across Thorndike Street and along the edge of the South Common. The improvements will include a new crosswalk across Thorndike Street by the station driveway, as well as new sidewalks and street trees along South Common onto the Lord Overpass.

In addition, two existing pedestrian bridges (B4 and B5) across the Hamilton Canal will be rehabilitated and integrated into the Phase 1 plans to rehab the Appleton Mill buildings. The eastern-most bridge B5 is full street width and goes through a large opening in the mill facade that aligns with the new street E and bridge B3 crossing the Lower Pawtucket Canal. During the charrettes, participants agreed that when completed, this would become a very desirable pedestrian route from Jackson Street to Downtown at Market Street via the courtyard opening in Market Mills.

From the West:

An extension of Jackson Street (new street B) to the west is an important new access point for the District. This connection to Thorndike/Dutton Street at Fletcher Street opens up both pedestrian and vehicular access from the west. Designed as a slower moving “parkway” connector, the new intersection will be signalized to allow westbound vehicles to continue west or turn north or south and to allow pedestrians to cross to the Western Canal walk, the proposed Upper Pawtucket Canal walk and the Acre neighborhood. This new grade-level crossing will link to a pedestrian bridge proposed by the NPS along the historic rail trestle at the nexus of the three canals, creating an exciting and unique walkway across the water leading to the NPS canal boat dock at the junction of the Merrimack and new Lower Pawtucket Canal walks. The Jackson Street connection also allows new views into the District and the site of the Lowell Trial Court that will be developed by the Division of Capital Asset Management.

From the North:

The extension of Broadway onto the site (new street F) is envisioned as a broad, tree-lined street through the site, offering long views into the District, past a public park, Park Square, to the new bridge B3 crossing the Lower Pawtucket Canal. From the northern end of this bridge there will be an unobstructed view south through the opening in the Appleton Mill to Jackson Street.



PARK SQUARE LOOKING NORTH TO BROADWAY





LOWER PAWTUCKET CANAL LOOKING EAST

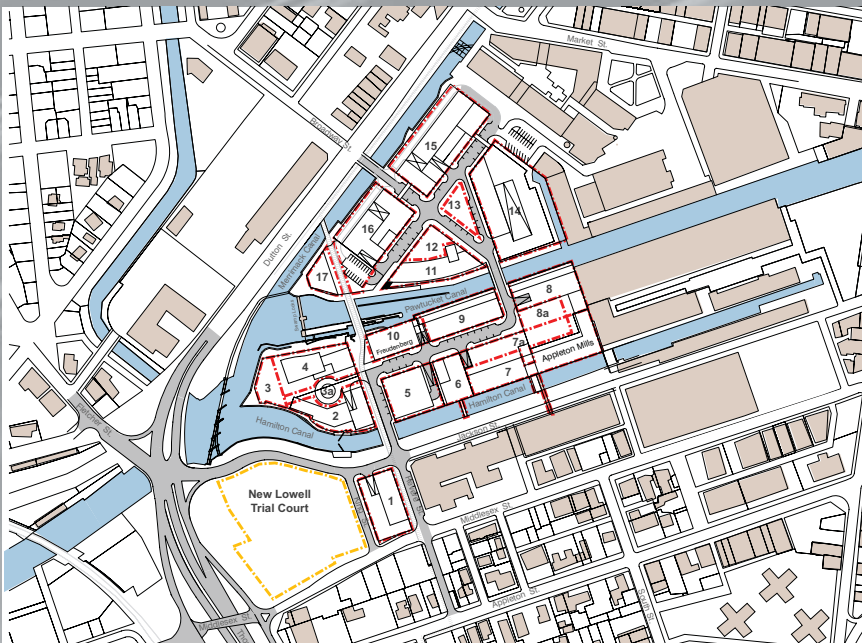
Within the site:

The Swamp Locks Bridge (B2) will be rebuilt to provide a connection for the trolley and pedestrians crossing a new axial street (New Street G) that will align with the Market Mills pedestrian connection to the NPS Visitor Center and Downtown offering clear visual access between Market Mills and the Swamp Locks Falls at the tip of the island. The length of this new street will be populated with retail shops and parks.



NEW STREET G LOOKING SW FROM PARK SQUARE

Parcel Development Concepts: Use and Form



The subdivision plan to the left illustrates the Master Plan layout for the District showing the new public street rights-of-way, and identifying each development parcel by number, each with a distinct character and set of buildings. The aerial view to the left shows a three-dimensional view of the District, illustrating the overall scale of the full build-out and the relative scale of the new buildings and site features.

This Master Plan for the Hamilton Canal District will be codified in a new Form Based Zoning Code (FBC). The FBC will establish parameters for the building forms on each development parcel including height, massing, relationships to street lines, open space and the canals and canal walks. These parameters have built-in flexibility to allow for alternate uses and building forms while maintaining the critical urban design characteristics identified in the FBC.

The Parcel descriptions that follow illustrate the currently proposed vision for each development parcel. The description of Parcel 5 illustrates this flexibility. The Master Plan shows this parcel being used for a 450-seat regional theatre facility, but if this does not prove to be economically viable, the parcel could be developed as housing or commercial space, requiring different building massing that the FBC will allow.

The development of a diverse mix of new uses creates an economic energy pivotal to the success of the District. The juxtaposition of historic mills, contemporary structures and extensive new canal walks presents a unique opportunity to develop a poetic synergy between the historic infrastructure of the canals and a vibrant new commercial district.

Section View Looking West



Hamilton
Canal

Lower
Pawtucket
Canal

Merrimack
Canal

Section View Looking East



Merrimack
Canal

Lower
Pawtucket
Canal

Hamilton
Canal

Parcel 1

The parcel descriptions included here show the uses and overall size of the buildings proposed for each development parcel in this Master Plan. The final uses and building forms for each parcel may change within the parameters of FBC as a result of evolving market conditions.

Across the majority of the District, building height and mass are scaled to match adjacent historic mill buildings. Proposed structures on the point south of the Swamp Locks Falls will be higher and more prominent, stepping up to take advantage of long views over the water and serving, along with the Lowell Trial Court, as visible symbols of renewal and growth along this important entry corridor to the City. The Section views through the Site illustrate the comparative massing of various buildings proposed in this Master Plan.

Along the Revere Street entry to the site, a new contemporary office building is contemplated for Parcel 1, next to the Lowell Trial Court. The Lowell Trial Court will occupy a large parcel at the west end of Jackson Street close to the Lord Overpass and will create an important gateway to the site and the City. Given the large number of people who will work and travel through this complex every day, the Lowell Trial Court should generate a demand for office space and retail services. The new six-story office building proposed for Parcel 1 will leverage its proximity to the Lowell Trial Court with retail businesses at ground-level and offices on upper floors. This building will be up to six stories high with up to 89,500 GSF of commercial space and up to 8,000 GSF of ground floor retail, potentially with two below grade parking levels. The site will be linked to the new residential and mixed-use areas in the remainder of the development via the new Revere Street bridge across the Hamilton Canal.



Parcels 2 3 & 4

These three parcels occupy the most visible site within the District, just south of the Swamp Locks Falls at the junction of the Upper Pawtucket and Hamilton Canals. This Master Plan illustrates the development scheme proposed during the Charrette process including a signature, fifteen-story high-rise building on Parcel 4 overlooking the canal junction, providing a highly visible entry to Downtown from the Gallagher Terminal and Thorndike Street as well as a dramatic terminus to the view corridor from Market Mills. This building sits back from the Swamp Locks, providing ample space for servicing the canal and NPS canal boat docks. A broad deck overlooking the Swamp Locks would be an ideal location for a restaurant or café. Parcel 2 is illustrated with a six-story building extending along the Hamilton Canal edge, leading to the new Point Park, and an overlook of the nexus of the canals. The current draft of the Form Based Code allows for fifteen-story buildings on both Parcels 2 and 4. The Draft Environmental Impact

Report to be filed in mid-October is required to include shadow studies of these proposed high-rise buildings. This could result in the fifteen-story building moving south onto Parcel 2 and the six-story building taking its place on Parcel 4. Between these two parcels there will be up to 250 housing units, 11,000 GSF of ground floor retail and two below grade levels of parking. Both of these buildings will front on new street C, the extension of Revere Street onto the Island, and may offer retail space along the street facing the new trolley line extension with housing above. Parcel 3 is a beautiful site at the western point of the Island surrounded by the junction of the canals and overlooking the historic rail trestle that is to become an extension of the canal walkway system. This parcel is being reserved as a public park currently referred to as Point Park, as further described on page 43.



Parcel 5

A new 450- seat regional theater/entertainment venue on the east side of the Revere Street entry to the Island could create a strong arts focus for the development that could complement the artists' live/work housing proposed on Parcels 6 and 7 as part of Phase 1.

In the event that such a theatre complex proves not to be economically feasible, the Form Based Code for

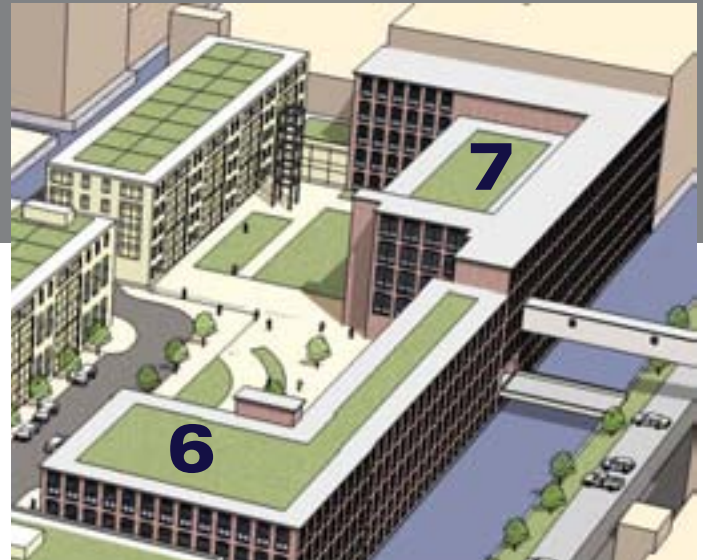


this parcel will allow for the building form to take on an "L" shape that would work for housing as demonstrated in the alternate view shown here. The



building will be a minimum of 55 feet high up to a maximum of 70 feet high, depending on its use.

Parcels 6 & 7



A portion of Phase I of the development, on Parcels 6 and 7, will involve the historic rehabilitation of the Appleton Mills complex into approximately 135 new units of artists live/work housing. Parking for these units will be available in the City's new Early Garage on Jackson Street. The north and east facades will define two sides of a contemporary interpretation of a mill yard that will have public access from Jackson Street via the existing bridge (B5), completing an important pedestrian connection onto and through the site. In addition, the existing overhead bridge (B6) crossing Jackson Street will be restored as an historic feature, but without function. A second pedestrian bridge (B4) over the Hamilton Canal into the west end of the Appleton Mill complex will be reconfigured in the same location and will allow access into a community space that could be used for public or private events and exhibits.



Parcels 8 & 9

The remaining masonry walls of the Appleton Mill structures along the Lower Pawtucket Canal offer a unique opportunity to weave the site's physical history into a contemporary use. The proposed two new six-story buildings (five stories above street grade) sit behind these masonry remnants and are configured to include a linear trellised deck mid-way up the building that would host private residential terraces with great views of the canal over the remnant wall.

Above the two-story height of the remnant walls, a double-loaded corridor building, with housing units facing both the canal and the street, is envisioned. These two buildings are expected to produce up to 125 housing units. Elevations will reflect the simple grid of punched openings suggested in the historic remnants. Just beyond this complex, the new vehicular bridge will connect to the northern parcel of the site, breaking through the remnant wall, and engaging new visual and physical connections throughout the District.



Parcel 11



A proposed contemporary building will arc along the curved edge of the Lower Pawtucket Canal, highlighting the proposed canal walk along the northern edge of the canal. The Master Plan shows this building with up to 68 housing

units and the possibility of ground floor small business or live/sell spaces for artists along the canal walk. However, if the NPS parking lots could not be conveyed and used as contemplated in this plan for commercial buildings, then the 80,650 GSF Parcel 11 would be a prime candidate for conversion to commercial office space. The

northern façade will provide a backdrop for a new district park, "Park Square," as described in the Open Space: The Public Realm section of this Master Plan. The building,

while reminiscent of the six-story scale of historic mill buildings formerly in the District, will be designed in a contemporary fashion, and highlighted by the entry and circulation tower

on a District plaza. The building will take full advantage of its southern exposure, providing sun shading that both reflects light into

spaces in the cold winter months and shades sun from windows in hot summer months.

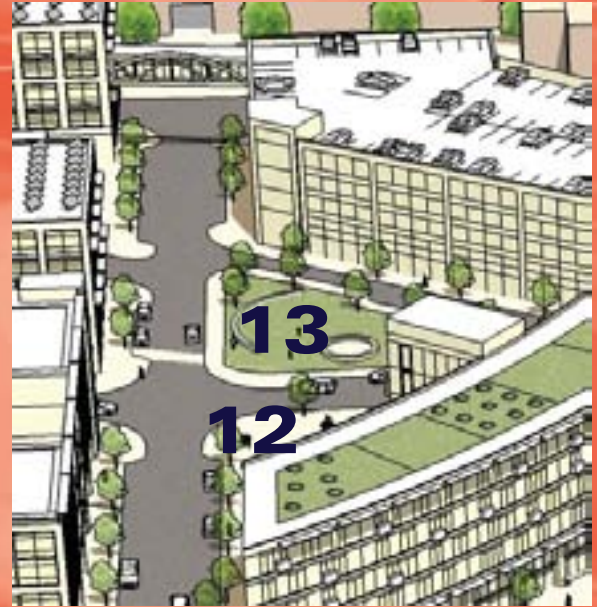
Parcel 10

The historic Freudenberg Building is slated to be redeveloped for commercial use. This 60,000 square foot, six-story building will be renovated to reveal its simple concrete frame as part of the first phase of development. Under this plan, an existing two-story addition will be removed to reveal the original building and concrete block infill panels will be removed so that broad frames of glass can be inserted into the concrete frame to evoke the original historic industrial character of the building. The sixth floor of the building, currently enclosed by a windowless metal-panel system, will be reconstructed and set back from the predominant building facades to incorporate a rooftop terrace at the upper level. The lowest level may be converted to below grade parking.



Parcels 12 & 13

A new district park, Park Square, would connect views from around the site, allowing an inviting, open plaza capable of supporting community arts and cultural events, such as a venue for portions of the Lowell Folk Festival. The open park also provides views into the street-level retail shops, and the bridge B3 crossing the Lower Pawtucket Canal through the Appleton Mills remnant walls between Parcels 8 and 9.



Parcel 14

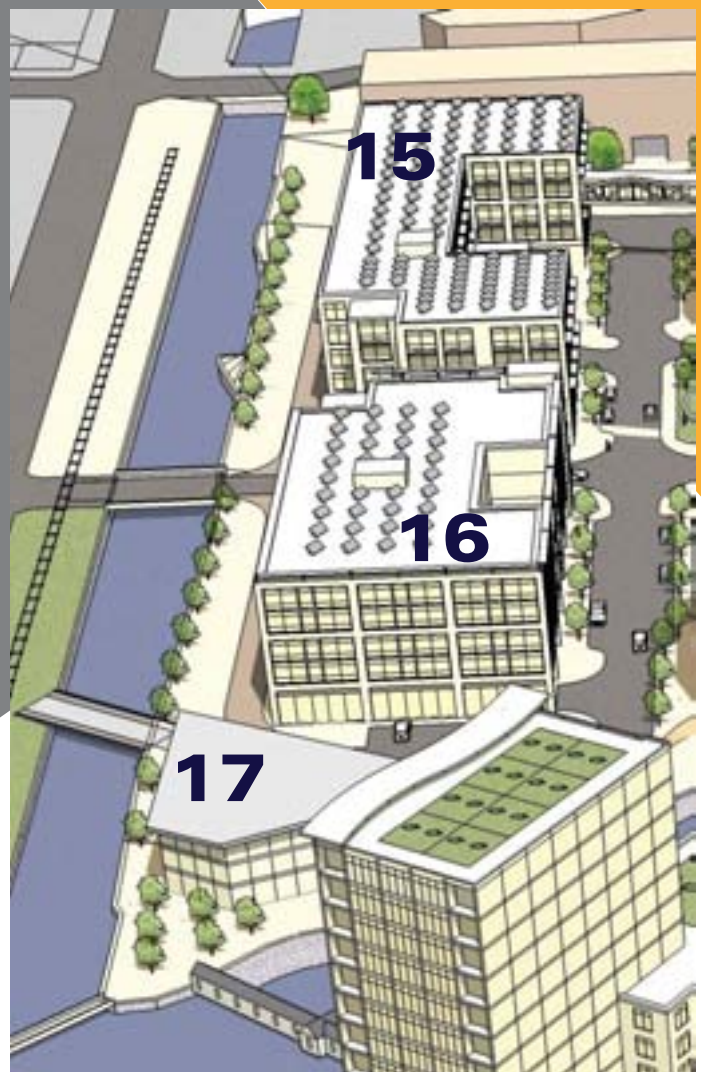


A new 980-car Parking Garage is proposed to support the commercial uses in the District and replace the 166 existing NPS surface lot spaces. The structure is envisioned to reflect the scale and massing of the historic mill buildings in the area, and will have a regular rhythm of “window” openings above retail space along the two streets that it fronts on. An interior ramp, hidden from street view, will connect the parking levels avoiding long sloping public facades. After Ca-

nal Place III residents voiced significant concerns about the parking structure, the proposed massing and details were substantially altered. The eastern wall facing these residents was reduced by two stories to a maximum of 40 feet high and a setback of 58 feet minimum is required before the western portion of the structure can rise to a maximum of 60 feet high. The walls facing east will be solid to eliminate headlight glare and vehicle noises, but these walls will also be covered with living plants as green walls. There will be a green roof over the eastern portion of the garage. In addition, a proposed walkway along the eastern façade, next to the tailrace canal was eliminated to avoid potential noise impacts.

The inclusion of the NPS surface parking lots in this Master Plan as Parcels 15 and 16 is critical to establishing a strong presence on Dutton Street for large scale commercial buildings and creating an important entry into the site at Broadway and Dutton. Under this plan, the extension of Broadway into the site will be framed by two new six-story commercial buildings scaled to match the adjacent mill buildings and including up to 232,000 GSF of commercial office space and up to 21,800 GSF of ground floor retail space. These buildings will face Dutton Street across the Merrimack Canal and front on the new internal street that connects to the Market Mills courtyard leading to Downtown. These buildings may be linked to each other and the parking structure on Parcel 14 by two overhead bridges reminiscent of historic overhead mill bridges. The goal is to draw large commercial anchor tenants that will create jobs and economic activity to support both Downtown and the District. As previously discussed, if the NPS parking lots are not included in the district, the Master Plan and program will be revised, producing less commercial space and fewer housing units. Parcel 17, located at the south end of the Merrimack Canal, overlooking views of the dramatic Swamp Locks Falls, will be reserved for a use appropriate to this special location with a maximum height of 40 feet.

Parcels 15 16 & 17

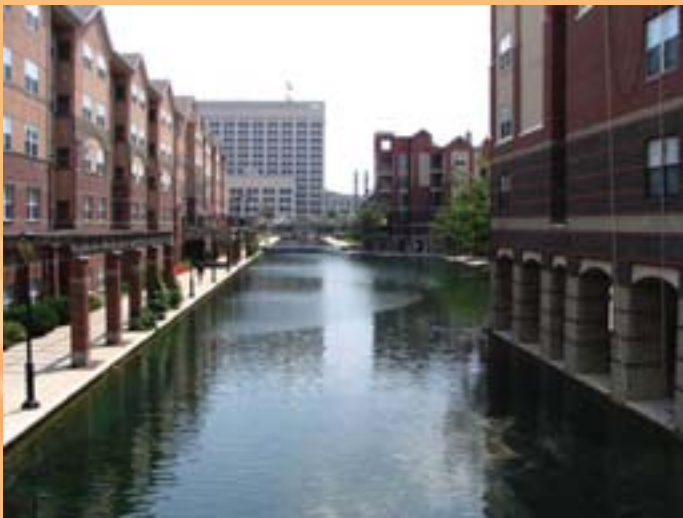




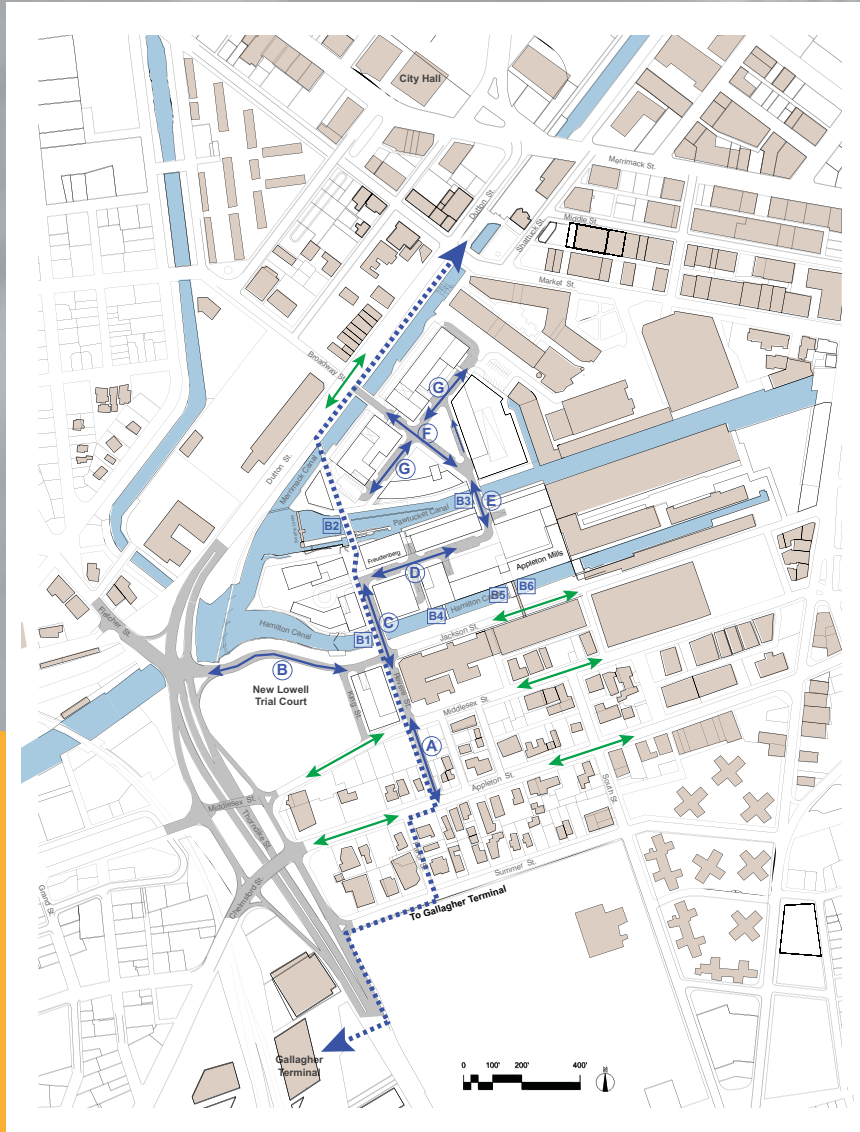
Architectural Character

The architectural character of the development will evoke the scale and density of the previous mill development, where appropriate, but will not mimic the look of the historic mill buildings. In accordance with historic preservation guidelines supported by the Secretary of the Interior through the National Park Service, the new buildings and additions shall be differentiated from the historic structures on the site. The introduction of a clearly contemporary architecture for new construction on the site achieves this objective while reflecting the consensus expressed by the public in the Vision Sessions. A variety of building expressions are envisioned to create a truly mixed-use district with the vitality of a district that emerged over time.



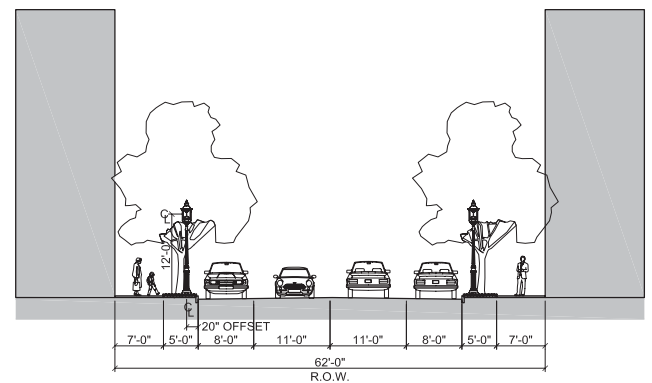
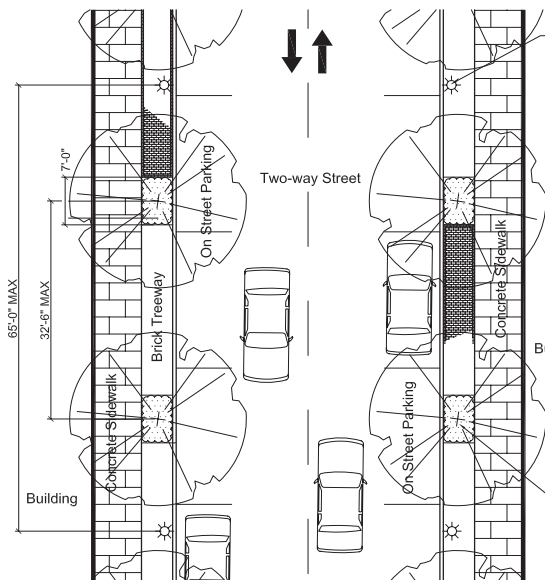
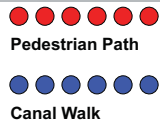
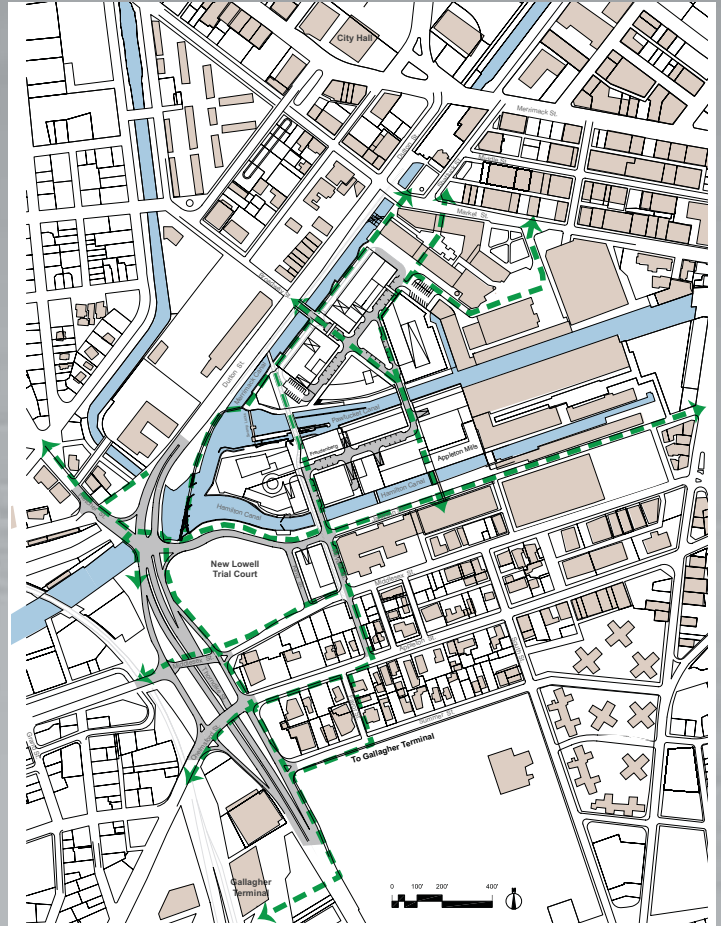
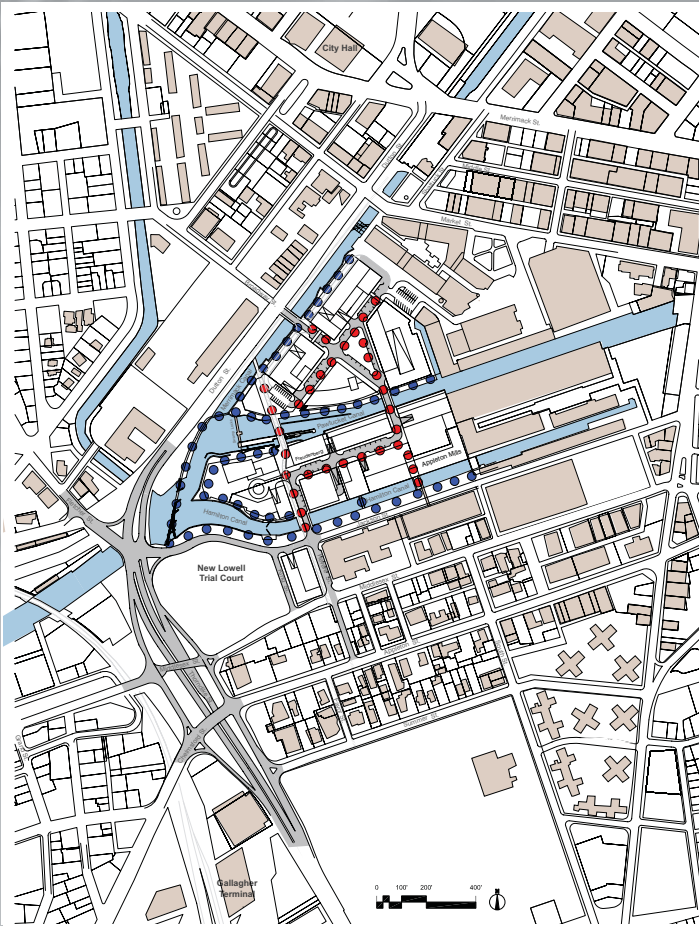


Circulation Plan



picturesque at the same time that they are practical pedestrian routes linking neighborhoods, both outside and within the District. New bridge B2 across the Lower Pawtucket Canal will be devoted to pedestrians and the proposed trolley route through the District, and will offer spectacular views of the Swamp Locks Falls to the west and the "Industrial Canyon" to the east.

The exterior connecting streets are described at length in Section 3: General Site Plan. The on-site circulation is designed to create great urban streetscapes that facilitate vehicular access while emphasizing the pedestrian's ease and comfort. The primary vehicular street system is straight forward. From the north, Broadway is extended onto the site (new street F) and proceeds southeast to a new bridge B3. It crosses the Lower Pawtucket Canal, turns west as new street D and then intersects the extension of Revere Street coming from the south across new bridge B1. This basic street system will be very pedestrian friendly with wide sidewalks, street trees, retail storefronts, and open spaces ranging from mill-yards to public parks. However, the on-site pedestrian experience will be much richer and more varied. Canal walks will be developed along the length of all the canals except the southern bank of the Lower Pawtucket Canal where existing historic walls rise directly above the canal walls. The canal walks will be dramatic and



TYPICAL NEW STREET



Open Space Plan: The Public Realm

The Hamilton Canal District provides many unique opportunities to enhance the public realm. These include a series of new pedestrian-oriented streets, new public parks, as well as pedestrian walks along the historic canal banks.

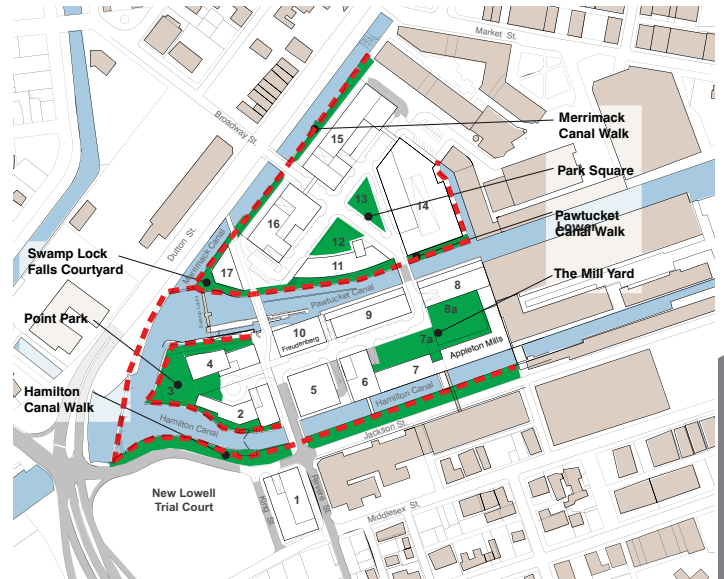
Park Square

Parcels 12 & 13

At the center of the site's north section, Park Square is proposed to consist of two open spaces on either side of the Broadway Street extension (Street F) into the District. The intimate, landscaped park (Parcel 13) to the north could host a landmark vertical sculpture at the apex of the triangle to be visible from the bridge crossing of the Pawtucket Canal. Benches under shade trees set in the lawn along the eastern edge, as well as water features and additional lawn, would provide relaxing places to sit and attractive views from surrounding buildings and from the primary site roadways. The Residential Plaza (Parcel 12) would create an entry to the new residential building and would open up to the green park across the new South Broadway (Street F). An accessible ramp would follow the east façade of this building to provide access down to the canal walk under the new bridge B3.



PARK SQUARE LOOKING AT PARCEL 15



Point Park

Parcel 3

Located at the western tip of the Island just above Swamp Locks Falls, Point Park is envisioned as a small public park with panoramic views of the junction of the Hamilton, Merrimack, and Upper Pawtucket Canals. Pedestrian access to the park would be via the new Revere Street (Street D) extension through a paved courtyard lined by retail and housing. The path would be wide enough to allow public safety access. The park would encourage both strolling and sitting in sun or shade on benches oriented to capture the views. The tip of the point and northern edge bordering Swamp Locks would be preserved as existing lawn and stone remnants of historic mill structures. Pedestrian scale lights would illuminate the park at night and the canal wall will be edged with an ornamental barrier rail.

The Mill Yard

Located between Parcels 7 & 8

The Mill Yard is proposed for the eastern end of the Island in the area framed by proposed housing along three sides of the open space. Accessible pedestrian access to the open space would be from two directions. From the south, the entry is at grade over a renovated pedestrian bridge over the Hamilton Canal through an existing gateway at the historic Appleton Mills. From the west, the primary pedestrian access would be via the sidewalk of the new street. Views from the street focus on The Mill Yard as cars and pedestrians turn north to meet the Lower Pawtucket Bridge.

The open space has two characteristics. The southern portion contains a semi-private green residential garden with fine textured plantings and benches in raised planters. The portion to the north contains a more open public paved plaza, organized around a proposed clock tower, or other element, marking the end of new street D.



PROPOSED MILL YARD LOOKING EAST

Canal Walks

Hamilton Canal Walk

This canal walk extends along the southern side of the Hamilton Canal from the western end of the extended Jackson Street, east across Revere Street, to the eastern edge of the Appleton Mills. At the west end this walk connects with the pedestrian trestle bridge across the Upper Pawtucket Canal proposed by the NPS.



HAMILTON CANAL WALK AND
JACKSON STREET EXTENDED

Merrimack Canal Walk

This canal walk extends along the southern edge of the Merrimack Canal. It will include post top lights and shade trees. These walkways connect to the National Park Service walkways that run along Dutton Street to Market and Merrimack Streets to Downtown Lowell.

Lower Pawtucket Canal Walk

The north side of this canal, facing south, will include a canal walk that extends from the easterly property line west to the tip of the northern island where it intersects with the Merrimack Canal Walk. The path includes lighting set back from the canal edge, lighting under the bridge, and a canal railing along the canal wall. Pedestrians will have wide views of the canal and remnant wall to the south. Accessible ramps and exterior stairs are provided down to the canal walk from the east end of the proposed residential building bordering the canal on Parcel 11.



LOWER PAWTUCKET CANAL
WALK FROM PARCEL 9

Jackson Street Sidewalk

The Master Plan recommends the construction of a new sidewalk on the north side of Jackson Street from Marston Street to Center Street. The proposed sidewalk will connect to the proposed Hamilton Canal Walk, as designed to be built by the NPS. This would complete the pedestrian connection from the Dutton Street Bridge to Central Street.



New View Corridors

The placement of streets and siting of new buildings creates view corridors that emphasize the district's greatest assets and elements, both historic and contemporary.



NEW STREET G LOOKING SW



NPS Visitor Center Entry – Swamp Locks Falls View Corridor

New street G and the view corridor it creates are proposed to link the National Park Service Visitor Center and its pedestrian connection to the Downtown to the east to the Swamp Locks and the new contemporary housing development at the westerly edge of the site. This new corridor will be a key pedestrian connection that will link the Hamilton Canal District with the core of the City. It will give new prominence to the Swamp Locks and knit the new development and the existing historic structures at the National Park Service Visitors Center into an urban framework that retains the character of the large mill structures of Lowell. At both ends of this walkway, signature open spaces will punctuate the pedestrian experience and enhance the historic character of its setting. This new pedestrian-oriented system will provide long views back to and across the canals throughout the property.

The Swamp Locks and Lower Pawtucket Canal View Corridor

The Swamp Locks and Lower Pawtucket Canal will be the visual heart of the Hamilton Canal District. A new pedestrian and trolley bridge connection across the Lower Pawtucket Canal will replace the existing vehicular bridge just east of the Swamp Locks, and will highlight the view of the Swamp Locks - making it a highly visible feature and amenity at the end of the canal. The canal walk on the northern side of the Lower Pawtucket Canal will be a central amenity for the entire development, enabling retail and arts uses access that enlivens the dramatic canal frontage, creating a visual amenity for residents of new housing on both sides of the canal. Retention of remnant walls of the Appleton Mills along the south side of the canal will enhance the value of the setting while retaining historic fabric.

Sustainable Design

An underlying theme during all of the Vision Sessions was “green buildings” and “sustainable development”. There was a clear consensus that the Hamilton Canal District must be developed with as much attention to environmental issues as possible within budget constraints.

The Hamilton Canal District will achieve compliance with the LEED Neighborhood Development criteria of the U.S. Green Building Council (USGBC). Although this program is only in its “pilot” stage, the neighborhood design criteria on this scale are well-crafted and can provide guidance for the design of the site systems and build-out of the program envisioned for the site. The LEED for Neighborhood Development Rating System integrates the principles of smart growth, urbanism and green building into the first national system for neighborhood design. The HCD will rate very well as a LEED –ND site because it is inherently a “smart,” transit-oriented development on an urban infill site adjacent to Downtown.

In addition to LEED-ND, all new buildings within the development will be designed to meet LEED New Construction or Home guidelines, and be certifiable under these systems. A minimum of three of the new buildings will be taken through the full certification process. LEED requirements go substantially beyond renewable energy and stormwater management, but these are two features that are conceptually evident in the Master Plan aerial sketch shown here. Green roofs will be a significant feature contributing to heat island reduction and stormwater management. Solar photovoltaic electric generation will be included to the extent that financial feasibility can be demonstrated along with numerous additional green strategies and technologies on a building by building basis.



Historic Preservation



Designations

The Hamilton Canal District is located within the boundaries of the Lowell National Historical Park & Preservation District (a National Register district), the Downtown Lowell Historic District (a local historic district), and the Locks & Canals Historic District (a National Register district and a National Historic Landmark). The historic structures within the District are also included in the Massachusetts Historical Commission's Inventory of Historic and Archaeological Resources of the Commonwealth as an area and individually. The Locks and Canals District includes the waterways, embankments, locks, and other associated features, as well as the mill yards adjacent to the canals.

The Appleton Manufacturing Company was one of the most important textile manufacturing interests in the City of Lowell in the 19th and early 20th centuries. Three buildings proposed for rehabilitation are part of this complex (Company Office Building, Mill No. 4, and Mill No. 1), which dates from the company's early 20th century period of reconstruction, and are located on Parcels 6 & 7 along the northern edge of the Hamilton Canal on Jackson Street. The Master Plan refers to these three connected buildings collectively as the Appleton Mills Building.

The other building proposed for rehabilitation on the site, the Saco-Lowell Shops Building #14, currently known as the Freudenberg Building, is one of the newest historic structures within the National Register districts, but is one of the most significant structures within the historic districts as it is the last remaining Lowell Machine Shop structure in the City of Lowell. The Freudenberg building sits on Parcel 10, abutting the Lower Pawtucket Canal to the north and the Appleton Mills Building to the east. The building is constructed using reinforced concrete and brick and exterior walls exhibit a grid pattern of large window openings framed by wide concrete pilasters, similar in design and character to the Dutton Yarn Building on Dutton Street.

In addition to these structures, remnant walls from other Appleton Mill buildings remain along the south side of the Lower Pawtucket Canal. These are seen as important historic remains because they sit directly on the canal wall and define the nature of the industrial canyon that previously existed. The Master Plan calls for these walls to be preserved and integrated into the new buildings proposed for Parcels 8 & 9.

On Parcel 1 there currently exists another building that was originally part of the Appleton Mill complex, the Cotton Storehouse at 324 Jackson Street. This structure has extremely low ceiling heights and after evaluating various options for its reuse, it was determined that none were feasible. This structure is scheduled for demolition by the State as part of its preparation of the Lowell Trial Court site.

Historic Structures

Beyond these specific building rehabs, the Hamilton Canal District will be transformed into a District that highlights and makes accessible the most significant historic resources on the site – the Swamp Locks and Falls and the canals themselves. The proposed canal walks will provide access and the new bridge crossings of the Lower Pawtucket Canal will draw pedestrians to vantage points that do not exist today. The bridge reconstruction just east of the Falls will also facilitate the extension of the NPS canal boat tours down the Lower Pawtucket Canal by creating additional headroom above the locks.



[4 ECONOMIC DEVELOPMENT IMPACTS]

FINANCIAL/MARKET FEASIBILITY

The Hamilton Canal District represents an extraordinary opportunity to transform a blighted tract of land into a vibrant community with the economic potential to enhance the entire City of Lowell. With its location near public transit, a growing population and the cultural, recreational and historical elements that tend to draw creative businesses and individuals, the HCD is poised to compete with other cities and developments to attract necessary capital investment. Additionally, Lowell's reputation as a proven market with \$183 million of private investment in Downtown and 2.6 million square feet of formerly vacant downtown buildings converted to new uses since 2000, has laid the groundwork for a successful future.

Authentic Urban Environment

Lowell's unique history has provided the backdrop for the community it has become, both physically and culturally. The urban fabric of the Downtown is dominated by statuesque mill buildings, historic canals, and the impressive Concord and Merrimack rivers that initially attracted industry to the City. These characteristics set apart Lowell's downtown from those of similarly sized cities and provide an authentic urban experience. From its beginnings as a destination for waves of European immigrants, today Lowell continues to draw individuals and families around the world.





Lowell's plethora of cultural resources, including museums, cultural facilities and art galleries/studios have the combined effect of giving Lowell a reputation as an arts haven. Organizations such as the American Textile History Museum, the Brush Art Gallery and Studios, the Western Avenue Studios, the Merrimack Repertory Theatre, The Revolving Museum and the performing arts groups of UMass Lowell and Middlesex Community College have contributed to the artistic aura of the community. A series of festivals such as the Lowell Folk Festival, the largest free folk festival in the country, have also added to the allure of the City as an arts mecca.





Lowell's downtown is peppered with a range of independent businesses and cafes that appeal to a diverse group of people-young and old. A mix of restaurants offer a global selection of foods, and art galleries/studios dot the historic cobblestone streets. The City also offers a full range of recreational activities. Sailing, fishing, waterskiing and other water sports are popular pursuits on the Merrimack and Concord Rivers. The Lowell-Dracut-Tyngsborough State Forest is located within the City, with 6 miles of trails for hiking, skiing, horseback riding, backpacking, and cycling and a 30-acre lake for skating and fishing. Atlantic Ocean beaches are less than an hour's drive and the White Mountains are a two-hour drive to the north in New Hampshire.

With a diverse population, street-level culture,

and access to active recreational activities, Lowell is an example of an authentic urban environment and is poised to draw members of what Richard Florida, author of *The Rise of the Creative Class*, terms “the creative class.” Made up of scientists and engineers, university professors, artists, architects, writers, and professionals in knowledge intensive industries such as the high tech sector, financial services, legal and health care, the creative economy represents an engine for economic development. According to Florida, “The key to economic growth lies not just in the ability to attract the creative businesses and individuals, but to translate that underlying advantage into creative economic outcomes in the form of new ideas, new high-tech businesses and regional growth.” Communities like Austin, TX and Minneapolis, MN that have genuine elements and foster diversity, have been most successful in leveraging those resources and attracting capital for investment.



Attracting and keeping such creative individuals

is a key component of the City's comprehensive master plan, and a priority of the Patrick Administration, which announced in 2008 the appointment of a first in the nation Creative Economy Director.

With a broad mix of uses, the thoughtful redevelopment of historic buildings, innovative, sustainable new construction, pedestrian oriented streetscapes and canal walks, and access to public

transit, the Hamilton Canal District development recognizes the importance of creating an environment that has by definition a high "quality of place." The Hamilton Canal District recognizes Lowell's creative community as a key element to the development's success and the continued success of the City. With both the genuine historic and cultural elements, and the traditional retail and office components that are essential to a successful urban community, Lowell has laid the groundwork for a successful future.



A number of additional factors will contribute to the success of the Hamilton Canal District. While separate market studies will likely be conducted on a parcel-by-parcel basis for individual development parcels, the following elements are integral to the success of the project as a whole.

Population Growth

Population growth is a key factor in determining the siting of development projects. According to a 2005 market study conducted by ZHA, Inc. and Zimmerman/Volk Associates, Lowell is part of the of the Boston-Worcester-Lawrence, MA-NH-ME-CT Core Based Statistical Area (the Boston CMSA). According to Census 2000, the Boston CMSA ranks as the country's 7th largest MSA in population. Sales, Marketing and Management's 2004 Survey of Buying Power ranks the Boston-Cambridge-Quincy, MA-NY CMSA 9th in total effective buying income. According to the bureau of Labor Statistics as of May 2005, the Boston MSA ranks 7th in total jobs among the nation's metro areas. The Boston MSA gained population between 1990-2000 and 2000-2004, and grew at a faster rate than the state as a whole. Within the Boston MSA, the majority of growth has happened in the suburbs, with the greatest rate of population growth occurring in the areas surrounding the Interstate 495 Corridor.

Location: Proximity to Transit

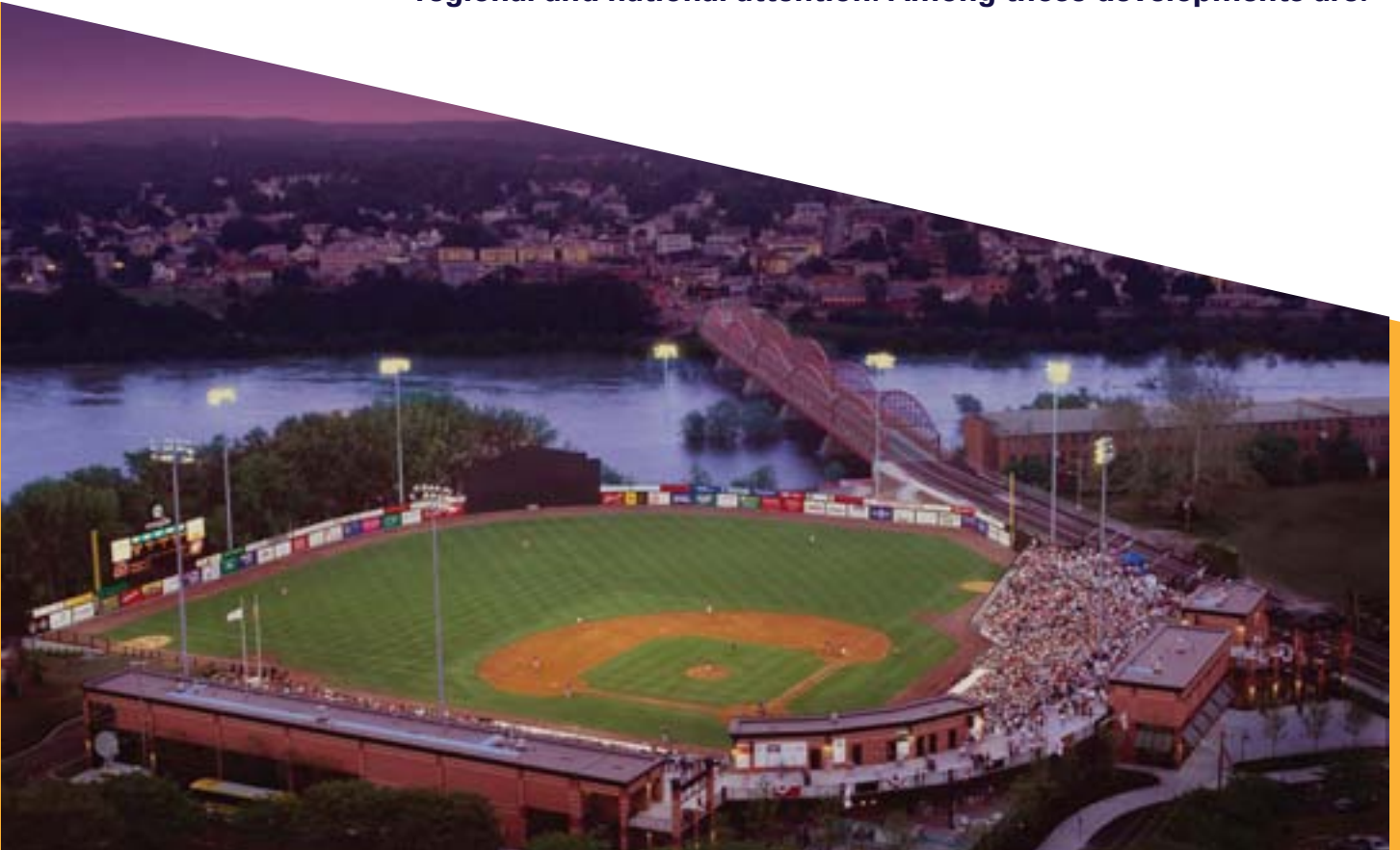
Proximity to transit is a key factor in determining development potential. The Hamilton Canal District is easily accessible to Boston via car and public transportation. Highlights include:



- Proximity to the Gallagher Transportation Terminal-access to MBTA Commuter Rail to Boston and LRTA bus service
- Access to Boston (33 miles) by car via Route 3, I-495 and I-93
- Access to two major airports: Boston's Logan International Airport (25 miles) and Manchester, NH airport (32 miles)
- Potential for the expansion of the existing trolley system to facilitate connections to the Gallagher Terminal and other neighborhoods

Success of the Downtown Redevelopment in Lowell

The Hamilton Canal District follows a series of successful redevelopments in the City of Lowell that continue to draw regional and national attention. Among those developments are:



■ **Lowell National Historical Park** - Established in 1978 and operated by the National Park Service, the Park draws hundreds of thousands of visitors a year to its thoughtful exhibits, Folk Festival and Summer Music Series.

■ **Tsongas Arena** - Since 1998, the Tsongas Arena has been a major cultural and entertainment asset in the heart of Downtown Lowell. The 7,800-seat arena is home to the Lowell Devils of the American Hockey League and the NCAA Division I UMass-Lowell River Hawks hockey team. The Tsongas Arena also hosts concerts, trade shows, and other functions throughout the year.

■ **LeLacheur Park** - Since 1998, the 5,000-seat LeLacheur Park has attracted visitors throughout the region to the minor league baseball games of the Lowell Spinners and the UMass Lowell Riverhawks baseball teams.

■ The successful adaptive reuse of the historic mills surrounding the Hamilton Canal District including: Canal Place I,II and III, the Cotton House Lofts, Boott Cotton Mills waterfront lofts, and Loft 27. The residential redevelopment has attracted residents from Boston and the surrounding areas.

■ The redevelopment of a series of Riverwalks and Canalwalks, providing engaging open space and recreational outlets.



ECONOMIC IMPACT/ JOB CREATION

A primary goal for the full build-out of the Hamilton Canal District development is the potential for job creation. It is anticipated that the employment opportunities will be both temporary/construction related and permanent as a result of the mix of commercial/office/research & development, retail and residential uses. Construction related jobs will be created as the individual development parcels are constructed. The estimates of job creation goals on the following page are based upon industry standards and the input of the project's professional consultants. The actual outcome of job creation will be based upon market conditions and the execution of the individual phases of the Master Plan.

CONSTRUCTION JOBS

It is anticipated that for every 100,000 square feet of development, approximately 80-88 full time construction jobs will be created.

PERMANENT JOBS

The development of up to 425,000 square feet of commercial/office/research and development is estimated to create up to 1,700 jobs. These jobs are anticipated to be employees of the building tenants and the supporting operations and maintenance staff necessary for those businesses (4 jobs estimated for every 1000 SF of commercial development).

The development of up to 55,000 square feet of retail is estimated to produce up to 110 new jobs, depending on the number of individual retail tenants in the Hamilton Canal District (2 jobs estimated for every 1000 SF of retail development).

The development of up to 725 housing units is anticipated to create up to 75 new jobs. These jobs are anticipated to be related to the sale/leasing of the units, and the ongoing operations and management of the residential units (5 jobs estimated for every 100 units created).

Below is an estimated job creation schedule based on the phases described in the Project Phasing section of the Master Plan. Since the proposed phasing schedule will be impacted by market/economic conditions and the ultimate uses of the phases are flexible under the Form Based Code, the estimated job creation schedule is also dependent upon those factors.

PROJECT JOB CREATION GOALS			
Phase	Proposed Parcels to be Developed	Estimated Construction Jobs Created	Estimated Permanent Jobs Created
Phase 1	Parcels 6, 7, and 10	From 230 to 265	Up to 215
Phase 2	Parcels 8 and 9	From 190 to 210	Up to 10
Phase 3	Parcel 1	From 110 to 120	Up to 375
Phase 4	Parcels 2, 4 and 5	From 350 to 385	Up to 165
Phase 5	14, 16 and 17	From 430 to 475	Up to 500
Phase 6	11 and 15	From 205 to 225	Up to 535
TOTAL BUILD OUT		From 1515 to 1680	From 400 to 1800

STRATEGIES FOR NEIGHBORING PROPERTIES

There are a number of properties that surround the Hamilton Canal District that are in various stages of the development process. The development of these projects will enhance the proposed build-out and add to the vitality of the Downtown.

The City of Lowell is working with the Massachusetts Division of Capital Asset Management (DCAM) for the disposition of the land at the intersection of Jackson, Middlesex and King Street for the development of a Lowell Trial Court. The building will be a comprehensive justice center serving the Superior Court, District Court, Juvenile Court, Housing Court, and Probate & Family Court. The building is proposed to include sixteen new courtrooms, secure parking and a law library. DCAM has been an active participant in the Hamilton Canal District Vision Sessions.

Lowell Trial Court

National Park Service Parking Lot Development

Discussions are underway with the Master Developer, the City and the National Park Service about the potential disposition of the approximately 2.2 acre surface parking lot along Dutton Street. The lots frame the primary gateway into the Hamilton Canal District from Dutton Street and would allow for the appropriate floor plates to support larger office/research & development uses. Should a conveyance of the National Park Service parking lot be unsuccessful, the proposed combined commercial/research & development and retail square footage in the Master Plan would decrease to 175,000 GSF and the number of residential units would decrease to a minimum of 500.

Jackson Street Canal Walkway

The National Park Service has completed designs for a canal walkway along Jackson Street from the east end of the Appleton Mills Building on the North side of the Hamilton Canal west to Dutton Street. This walkway would activate the Hamilton Canal and provide an attractive streetscape along the southern edge of the Hamilton Canal District. The proposed canal walk will enhance the pedestrian connection to the Gallagher Terminal and provide the much needed connectivity to the Lower Highlands and Acre neighbor-

hoods. As part of this proposed canal walk the railroad trestle bridge spanning the Hamilton Canal would be converted into a pedestrian walkway. A strategy for extending the Jackson Street canal walkway east to Central Street needs to be finalized and the walkway designs need to be integrated with the plans for the Architectural Heritage Foundation development, the Phase I Hamilton Canal District development and the traffic improvements for the Hamilton Canal District.

Development of AHF/Banc of America CDC Properties

The proposed Hamilton Canal Lofts project will deliver a two-phased mixed use development to the City of Lowell's Jackson-Appleton-Middlesex Urban Revitalization and Development Area. The project will be developed by a joint venture between the Architectural Heritage Foundation and the Banc of America CDC and will rehabilitate two buildings, separated by the Hamilton Canal, that were formerly part of the Hamilton Manufacturing Company's textile mill complex. These elegant brick buildings are connected by a series of historic bridges that will be restored as part of the project, providing efficient pathways for the residents and unobstructed views of the canal.



Expansion of the Existing Trolley System

The National Park Service has been studying the potential expansion of the existing trolley system for a number of years. This proposed expansion would be a significant public benefit to the Hamilton Canal District and the City of Lowell. By connecting the Gallagher Terminal with the Hamilton Canal District and the University of Massachusetts campus, providing reliable headways and modern equipment, Lowell can leverage its public transportation to attract residents, businesses and students. It is anticipated that the Lowell Plan and the National Park Service will move the existing feasibility study forward to determine the necessary strategy for financing, design and construction.



Pedestrian Bridge Across Lower Pawtucket Canal

The Vision Sessions produced a number of concepts that were incorporated into the Master Plan for the Hamilton Canal District. One of the concepts that was not incorporated into the Master Plan was the desire to create a bridge crossing on the Lower Pawtucket Canal that would connect the Loft 27 parking lot with the walkway on the north side of the Lower Pawtucket Canal. This concept should be further explored by the City and the relevant landowners to fully determine its feasibility.

Additional Properties

There are also a number of additional properties on Middlesex Street and Jackson Street that are slated for redevelopment. These improvements will continue to enhance the neighborhood and reinforce the physical and economic connections between the Downtown and the Hamilton Canal District. The success of the HCD project will strengthen the market and add to the viability of these adjacent projects.

[5] PROJECT PHASING AND FINANCING¹

PHASING PLAN

The Development Site has been divided into specific development parcels as a part of the Master Plan for the Hamilton Canal District. The full build out of the Hamilton Canal District, not including the potential NPS parking lot land, is anticipated to occur over a ten-year period. The general contractor for each building or phase will be working with the developer on a construction management plan to address the various details regarding overall site constraints for each phase as well as the management of heavy equipment, construction hours, safety, etc.

The construction commencement of specific phases will be subject to financing availability, and economic conditions that could adversely affect the feasibility of the improvements contemplated by the Master Plan. Alternatives to this phasing plan will inevitably occur as a result of market forces, and accordingly the project schedule may be undertaken at different times between the beginning and end of the phasing plan, and/or in a different order from that described below. The timing of the construction of public infrastructure will also be a factor in project phasing and will be subject to the availability of funding and the timely execution of funded facilities.

The following is a proposed development phasing plan for the Hamilton Canal District, based upon just one assumption of a viable construction phasing plan.

Phase	Anticipated Parcels	Anticipated Uses (flexible under the Form Based Code)	Anticipated Construction Start	Anticipation Construction Completion	Staging Area
Phase I	6,7 and 10	Up to 190 residential units, 10,000-60,000 SF commercial	May 2009	June 2011	Parcel 5
Phase II	8 and 9	Up to 140 residential units, parking	July 2011	August 2013	Parcel 5
Phase III	1	60,000 to 135,000 SF commercial and retail, and parking	July 2011	August 2013	Parcel 5
Phase IV	Parcel 2, 4 and 5	Up to 250 residential units, 5,000 to 45,000 SF commercial and retail, parking	March 2015	April 2017	Parcel 3
Phase V	Parcel 14, 16 and 17	6,500 to 175,000 SF commercial and retail, parking	March 2017	April 2019	Parcel 11
Phase VI	Parcel 11 and 15	Up to 85 residential units, 10,000 to 130,000 commercial and retail, parking	September 2018	October 2020	Parcel 12 and east end of Parcel 15

The above schedule assumes the development of the NPS parking lot land as part of the Project. Should that land not be available for disposition/development, changes to the Master Plan may be required.

Below is a proposed schedule for the public infrastructure improvements to the site based upon an assumption that the design funding would be made available to the City in November, 2008. The City will work cooperatively with Trinity to secure the funding for the public infrastructure, however Trinity will have the responsibility of securing the funding. Public infrastructure improvements include reconstruction of two existing bridges and construction of a new bridge across the Lower Pawtucket Canal to be bid and constructed by the City.

SCHEDULE FOR PUBLIC INFRASTRUCTURE

Design Funding to City - by November 2008 (Assumption)

City Prepares/Awards Design RFP - 6 months to May 2009

Design - 12 months to May 2010

Secure Construction Funding - 8 months to December 2010

Bid and Award Construction Contracts - 3 months to March 2011

Construction of On-Site Roads and Bridges - 14 months to May 2012

The proposed uses for the Hamilton Canal District are a mixture of residential, commercial and retail uses. The Master Developer will seek out a combination of private and public funding for the development of the parcels and the infrastructure.

The total projected cost of the estimated 1.9 million square feet of development is projected to be up to \$800 million. This number was estimated by assuming a hard cost figure of \$200 per square foot. An additional 30% was included for soft costs and adjusted by 4% for inflation over a ten-year period.

The residential portions of the development are anticipated to include affordable and market rate rental and for sale housing. For residential portions of the development, proposed sources of funds include: federal and state historic tax credits, tax exempt loans from MassHousing, Priority Development funds from MassHousing, federal and state housing tax credits, federal HOME and Housing Stabilization Funds from the Department of Housing and Community Development, Affordable Housing Trust funds and Transit-Oriented Development funds, conventional debt and equity sources and sales proceeds from homeownership units.

The proposed sources of funds for the commercial portions of the development include New Markets Tax Credits, federal and state historic tax credits, conventional debt and equity financing.

The buildout of the Hamilton Canal District will also require significant infrastructure costs including: new streets, pedestrian and vehicular bridges, sidewalks, public green space, linear parks, water, sewer and other utilities. While some of these costs can be offset by funds from existing programs such as Community Development Action Grant (CDAG) and funds from the Intermodal Surface Transportation Efficiency Act (ISTEA), it is anticipated that a significant portion of these funds will be funded by the \$10 million line item for costs associated with traffic, transit, streetscape and pedestrian improvements in the Hamilton Canal District established in the 2008 State Transportation Bond Bill.



DEVELOPMENT FINANCE STRATEGY

A number of successful mixed-use projects have been developed using similar mixed-finance strategies.



The Carruth

is a transit-oriented development that involves the construction of 116 units of mixed income housing and approximately 10,000 square feet of neighborhood retail on a site directly adjacent to the Massachusetts Bay Transportation Authority's Ashmont Peabody Square Station in the heart of historic Peabody Square. The development parcel is the subject of a long-term ground lease between Trinity and the MBTA. The building is a six-story structure with one floor of neighborhood retail and five stories of housing. Floors 1-4 include 74 affordable rental units and floors 5 and 6 include 42 market rate condominiums. This development involved 17 different funding sources, including tax credit equity, tax-exempt bonds, transit-oriented development funds and the sales proceeds from homeownership units. Construction was completed in 2008 and occurred in unison with the MBTA's total reconstruction of the adjacent Ashmont Peabody Square Station.



Trinity Terrace

is a 62-unit mixed-income rental housing development in the Four Corners neighborhood of Dorchester, MA. The development involved the acquisition of a large private parcel as well as the assembly of approximately 22 vacant lots owned by the City of Boston. Additionally, the project included the historic rehabilitation of an existing commercial structure on the site. The rehabilitated building consists of first floor retail/office space with housing units above. At Trinity Terrace the critical details – such as pitched roofs, both brick and clapboard siding, bays and dormers, generous front porches, appropriate landscaping, including private outdoor space, and wood and metal fencing were integral in appealing to a broad mix of incomes. A key aspect of the design was to bring a street through the middle of the development.

This opened up the interior of the site, and completed a right of way that had been on paper for more than 100 years. Trinity Terrace had a total development cost of approximately \$15.6 million. Development sources include funds from the City of Boston, the Commonwealth of Massachusetts, \$700,000 of 9% credits and \$1,566,000 of State credits. The equity was purchased at a price of \$0.78 for the 9% credits and \$0.54 for the State credits. The development was also eligible for Historic Tax Credits, purchased by the investor for a price of \$0.90 per tax credit dollar. Construction of Trinity Terrace concluded in September of 2004.

Located in the heart of Boston's historic Bulfinch Triangle,

Avenir

is a 10-floor mixed-use, transportation-oriented development that includes retail on the ground floor, a 116 space-parking garage on the second and third floors, and 241 residential units, including 17 affordable units, on the second through tenth floors. The Project site, the Massachusetts Bay Transportation Authority's (MBTA) Parcel 1A, sits directly above the MBTA's North Station Green and Orange-Line Superstation and was the result of the removal of Boston's elevated expressway in The Big Dig. Trinity was the first development team to complete permitting and begin construction on a project in the Bulfinch Triangle neighborhood. The revitalized neighborhood presents the opportunity to re-link many downtown Boston neighborhoods, including the North End, West End and Charlestown to Government Center and the Financial District. Avenir was initially envisioned as a luxury condo-

minium development but due to unfavorable market conditions in 2006, Trinity responded and restructured the condominium portion of the building as apartments. In 2007, Trinity sold Avenir to Archstone Smith but has remained involved in the project as Development Manager. The project is financed through private equity and debt. Construction began in July 2007 and is expected to be complete in 2009.



[6 TRANSPORTATI CIVIL ENGINEERIN

TRANSPORTATION

The potential transportation impacts and site access issues associated with proposed redevelopment of Hamilton Canal District are significant. Throughout the master planning and Charrette process, the team's traffic planning consultant, Woodland Design Group, prepared an extensive, three-phase study of existing and projected traffic conditions. First, existing traffic conditions in the vicinity of the site were inventoried using traffic counts, accident data and field observations. In the second phase, the projected traffic demands of the proposed development along with background growth and future demands of other known future developments were combined with the existing data and projected out to the development completion year of 2017. In the third phase, mitigation measures to improve existing and future traffic operations, to minimize potential traffic impacts, and to provide safe and efficient access to the development were identified. The study provided a detailed analysis of traffic operations for the weekday morning, weekday evening and Saturday midday peak hour traffic conditions, when the potential traffic increases associated with the proposed mixed-use development would be greatest. The study also included an evaluation of existing and projected public transportation alternatives.

This complete study was included in the project Expanded Environmental Notification Form (EENF) and will be updated with final revised mitigation measures in the Draft Environmental Impact Report (DEIR) to be filed with the State in mid-October 2008. What follows is a condensed version of this study summarizing the projections and proposed mitigations for off-site intersections. The on-site circulation plan is discussed in Section 3 of this Master Plan.

Study Area Intersections

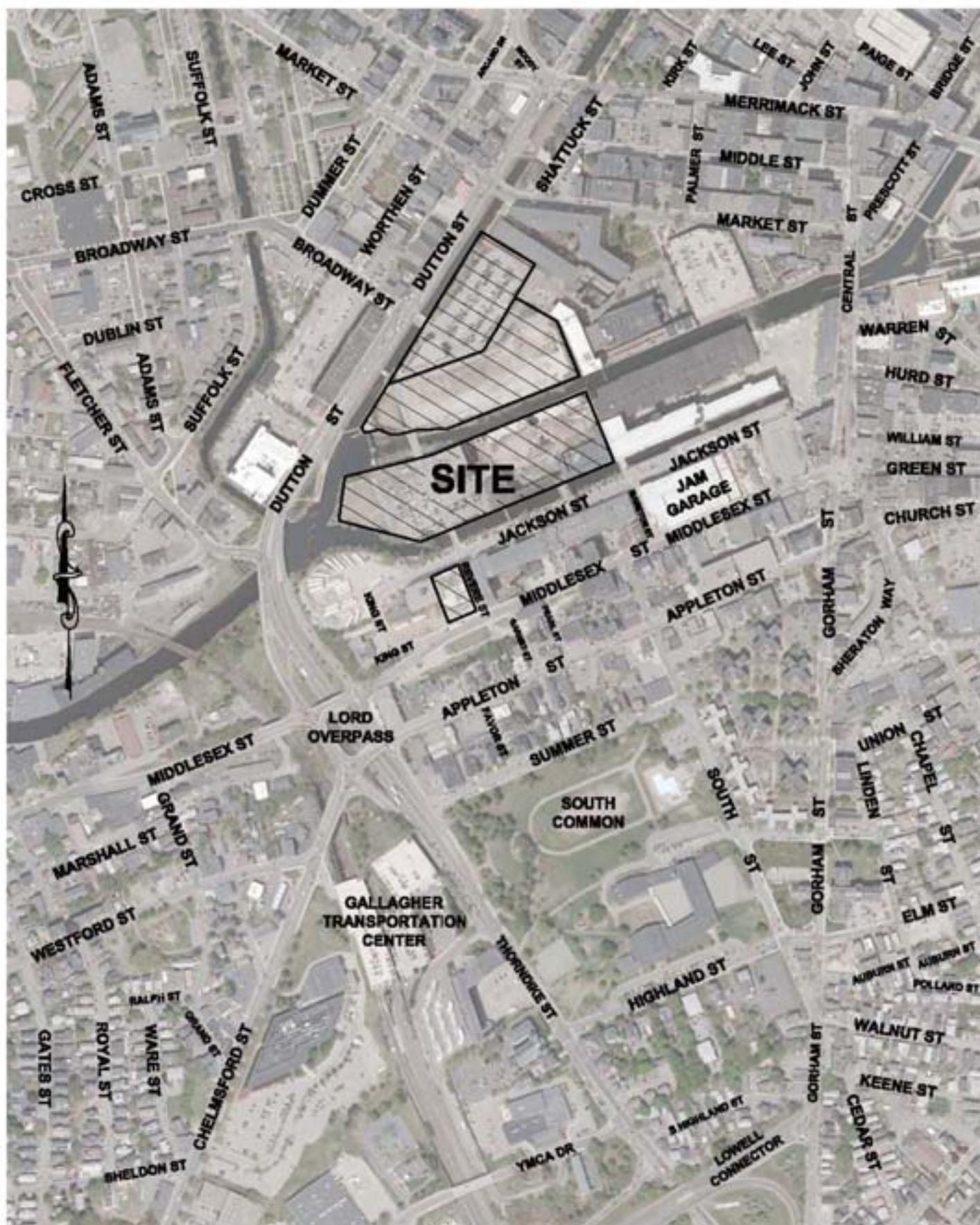
The study area chosen for detailed analysis was determined based on a review of the anticipated traffic generating characteristics of the proposed development program and input from City staff. The thirty-five intersection studies are shown in Figure 5- 2 and include:

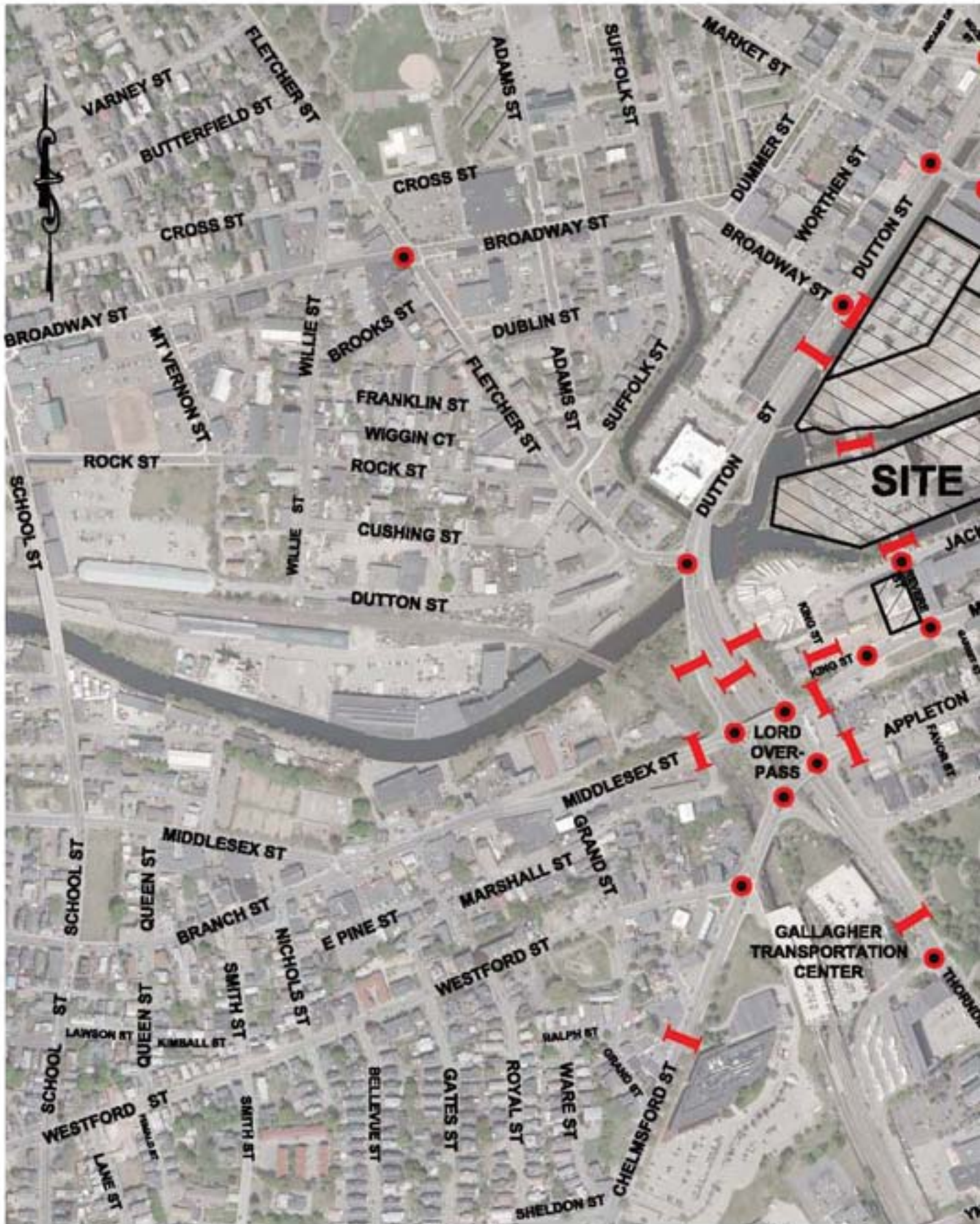
- Thorndike Street and Highland Street
- Thorndike Street and The Gallagher Terminal Driveway
- Thorndike Street Northbound Ramp and Middlesex Street
- Thorndike Street Southbound Ramp and Middlesex Street
- Thorndike Street Northbound Ramp and Appleton Street
- Thorndike Street Southbound Ramp and Chelmsford Street/Appleton Street

ON AND IG CONCEPTS]

- Chelmsford Street and Westford Street
- Dutton Street and Fletcher Street
- Dutton Street and Broadway Street
- Dutton Street and Market Street
- Dutton Street, Merrimack Street and Moody Street
- Market Street and Shattuck Street
- Merrimack Street and Shattuck Street
- Merrimack Street and Central Street
- Merrimack Street, Prescott Street and Bridge Street
- Central Street, Market Street and Prescott Street
- Market Street, Palmer Street and the Parking Garage Driveway
- Central Street and Jackson Street
- Central Street Middlesex Street Green Street and Gorham Street
- Gorham Street and Appleton Street
- Central Street, Appleton Street and Church Street
- Gorham Street, Highland Street and Elm Street
- Gorham Street and South Street
- South Street and Highland Street
- South Street and Appleton Street
- Middlesex Street and South Street
- Middlesex Street and Revere Street
- Middlesex Street and King Street
- Jackson Street and Revere Street
- Broadway Street and Fletcher Street
- Green Street and George Street
- Church Street and Lawrence Street
- Lawrence Street/Roger Street/Wamesit Street and Abbott Street
- Gorham Street and Lowell Connector

Each intersection was analyzed with respect to the HCD development-related traffic increases in the projected completion year of 2017. Table 5-4 from the study shows these increases for each intersection. It is worth noting that several of the study intersections were shown to be currently at or above capacity, and several more were projected to be at or above capacity with only the addition of the background growth factor. Less than ten of the thirty-four intersections studied were projected to exceed capacities solely due to HCD projected impacts. However, those intersections that are already at capacity or projected to be because of background growth will clearly suffer further capacity problems with the addition of the HCD impacts. Therefore, mitigation measures for all adversely affected intersections were developed and tested using the 2000 Highway Capacity Manual procedures and Synchro 6.0 software.





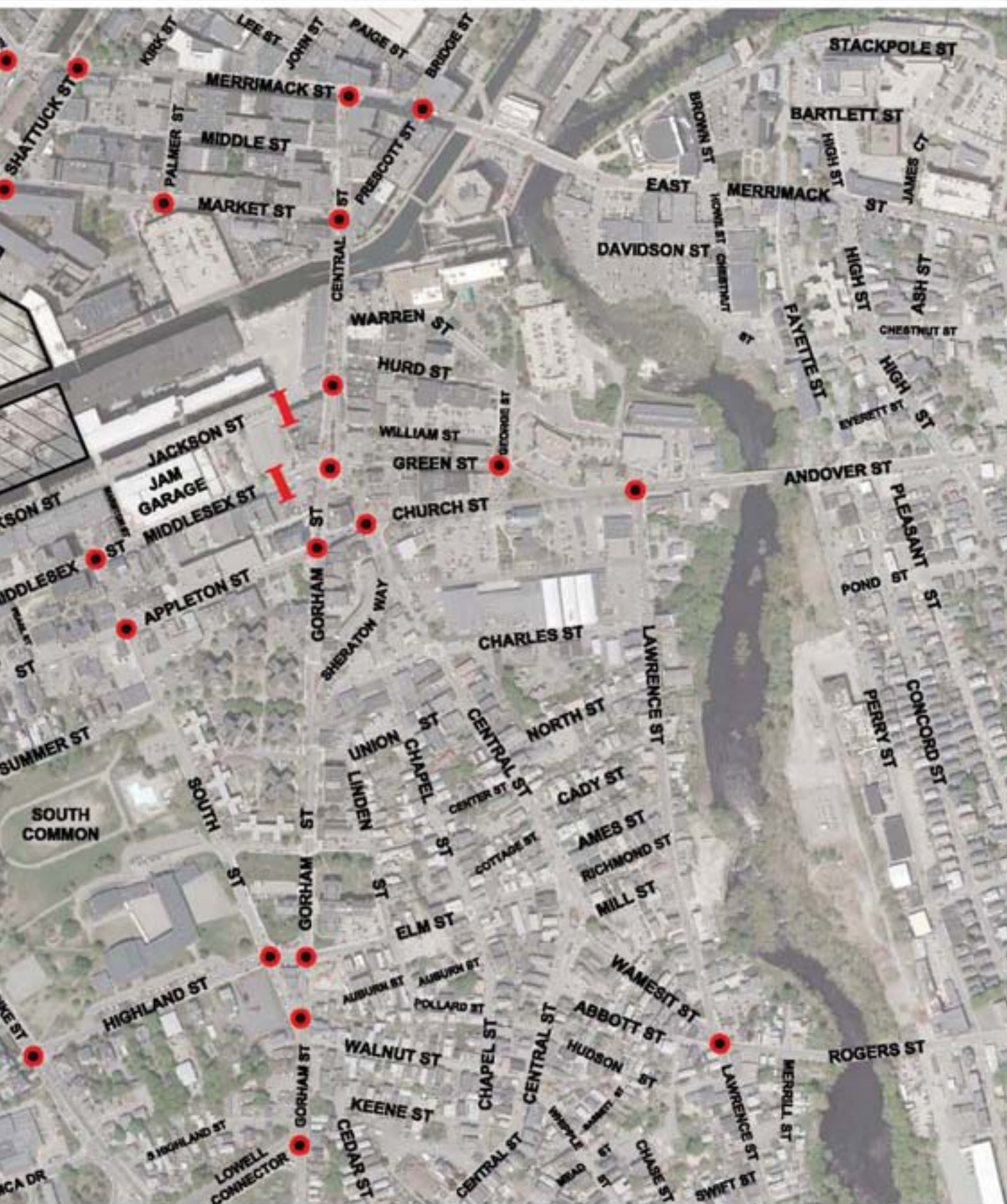


Figure S-2
Study Area Intersections
source: Woodland Design Group Inc.

Intersection Mitigation

The following figures illustrate the proposed modifications to each affected intersection. The complete traffic study in the EENF discusses each intersection in depth. Since the EENF was filed, a few of the intersection designs have been revised to reflect community concerns that emerged during Traffic Working Group meetings. The Figures 5-25, 5-26, and 5-30 have been updated to show the final conceptual improvements agreed upon.

All of these revisions emanated from the proposed elimination of the westbound Middlesex Street connection across the Lord Overpass. The revised Figure 5-26 included here illustrates this westbound connection being maintained which returns the Appleton Street leg of the Lord Overpass to a one way eastbound connection. This eliminates the need to reduce active parking lanes on Appleton Street in order to create additional travel lanes.

The revised Figure 5-25 included here illustrates modifications to the Thorndike St. / Dutton St. & Fletcher St. / Jackson St. intersection improvements which were required in order to keep the Jackson Street extension to Thorndike Street operational as an entrance point from the south. These modifications maintain all of the proposed turning

movements except the previously proposed left turn from Dutton, east into the Jackson St. extension – it was agreed that this was not needed. In addition, these modifications add a sidewalk onto the east side of the northbound ramp from Middlesex St. to the Jackson St. extension. This sidewalk will provide an additional desirable pedestrian route from the Gallagher Terminal to the HCD and the downtown by connecting to both the Jackson St. extension and the NPS pedestrian bridge across the Upper Pawtucket Canal.

The revised Figure 5-30 included here illustrates modifications to the Revere Street extension and intersection with Appleton Street. The revised trip generations resulting from the Lord Overpass modifications discussed above eliminate the need for dedicated right turn lane (and the signal).

Table 5-4 2017 Project Related Traffic Increases at Study Area Intersections (With Jackson Street Connection)

Location	AM Peak Hour Volumes			PM Peak Hour Volumes			Sat Peak Hour Volumes		
	No-Build	Project Trips	% Change	No-Build	Project Trips	% Change	No-Build	Project Trips	% Change
Thorndike St/Highland St	3,261	221	6.8%	3,441	311	9.0%	2,644	317	12.0%
Thorndike St/Gallagher Terminal Drwy	3,335	221	6.6%	3,460	311	9.0%	2,635	317	12.0%
Middlesex St/Lord Overpass NB	1,276	139	10.9%	1,591	144	9.1%	1,327	173	13.0%
Middlesex St/Lord Overpass SB	1,678	74	4.4%	1,960	148	7.6%	1,837	129	7.0%
Appleton St/Lord Overpass NB	1,701	145	8.5%	1,454	79	5.4%	1,578	170	10.8%
Chelmsford St/Lord Overpass SB	2,242	138	6.2%	2,186	175	8.0%	2,047	187	9.1%
Chelmsford St/Westford St	1,725	112	6.5%	1,679	155	9.2%	1,556	159	10.2%
Dutton St/Fletcher St	3,724	365	9.8%	3,885	517	13.3%	3,054	528	17.3%
Dutton St/Broadway St/Parking Lot	2,614	280	10.7%	2,518	443	17.6%	2,155	470	21.8%
Dutton St/Market St	2,352	89	3.8%	2,155	139	6.5%	1,877	139	7.4%
Merrimack St/Dutton St/Moody St	2,001	76	3.8%	1,979	91	4.6%	1,732	103	5.9%
Market St/Shattuck St	1,457	13	0.9%	926	48	5.2%	1,042	36	3.5%
Merrimack St/Shattuck St	1,117	42	3.8%	1,118	45	4.0%	1,072	55	5.1%
Merrimack St/Central St	1,122	42	3.7%	1,162	45	3.9%	970	55	5.7%
Merrimack St/Prescott St/Bridge St	1,763	75	4.3%	2,008	102	5.1%	1,630	106	6.5%
Central St/Market St/Prescott St	1,705	33	1.9%	1,955	57	2.9%	1,713	51	3.0%
Market St/Palmer St/Parking Garage	1,354	13	1.0%	1,100	48	4.4%	1,061	36	3.4%
Central St/Jackson St	1,470	20	1.4%	1,564	9	0.6%	1,335	15	1.1%
Central St/Middlesex St/Green St/Gorham St	2,376	95	4.0%	2,534	71	2.8%	1,993	102	5.1%
Gorham St/Appleton St	1,613	21	1.3%	1,720	62	3.6%	1,394	48	3.4%
Central St/Appleton St/Church St	1,723	66	3.8%	2,105	96	4.6%	1,617	97	6.0%
Gorham St/Highland St/Elm St	1,942	59	3.0%	2,141	85	4.0%	1,531	87	5.7%
Gorham St/South St	1,746	57	3.3%	1,791	79	4.4%	1,181	80	6.8%
South St/Highland St	622	76	12.2%	835	135	16.2%	615	125	20.3%
South St/Appleton St	1,085	97	8.9%	1,131	197	17.4%	1,077	173	16.1%
Middlesex St/South St	824	135	16.4%	885	100	11.3%	687	144	21.0%
Middlesex St/Revere St	732	238	32.5%	873	324	37.1%	622	333	53.5%
Appleton St/Revere St Ext	890	83	9.3%	964	188	19.5%	931	159	17.1%
Middlesex St/King St	899	21	2.3%	922	36	3.9%	620	31	5.0%
Jackson St/Revere St	452	474	104.9%	310	643	297.4%	46	662	1439.1%
Broadway St/Fletcher St	1,788	76	4.3%	2,170	103	4.7%	1,476	105	7.1%
Green St/George St	1,276	50	3.9%	978	37	3.8%	691	53	7.7%
Church St/Lawrence St	2,133	71	3.3%	2,226	99	4.4%	1,692	101	6.0%
Lawrence St/Rogers St/Wamesit St/Abbott St	1,265	64	5.1%	1,916	90	4.7%	1,281	94	7.3%
Gorham St/Lowell Connector	1,845	59	3.2%	2,083	79	3.8%	1,165	80	6.9%

***OFF-SITE
IMPROVEMENT
PLANS***

Hamilton Canal District



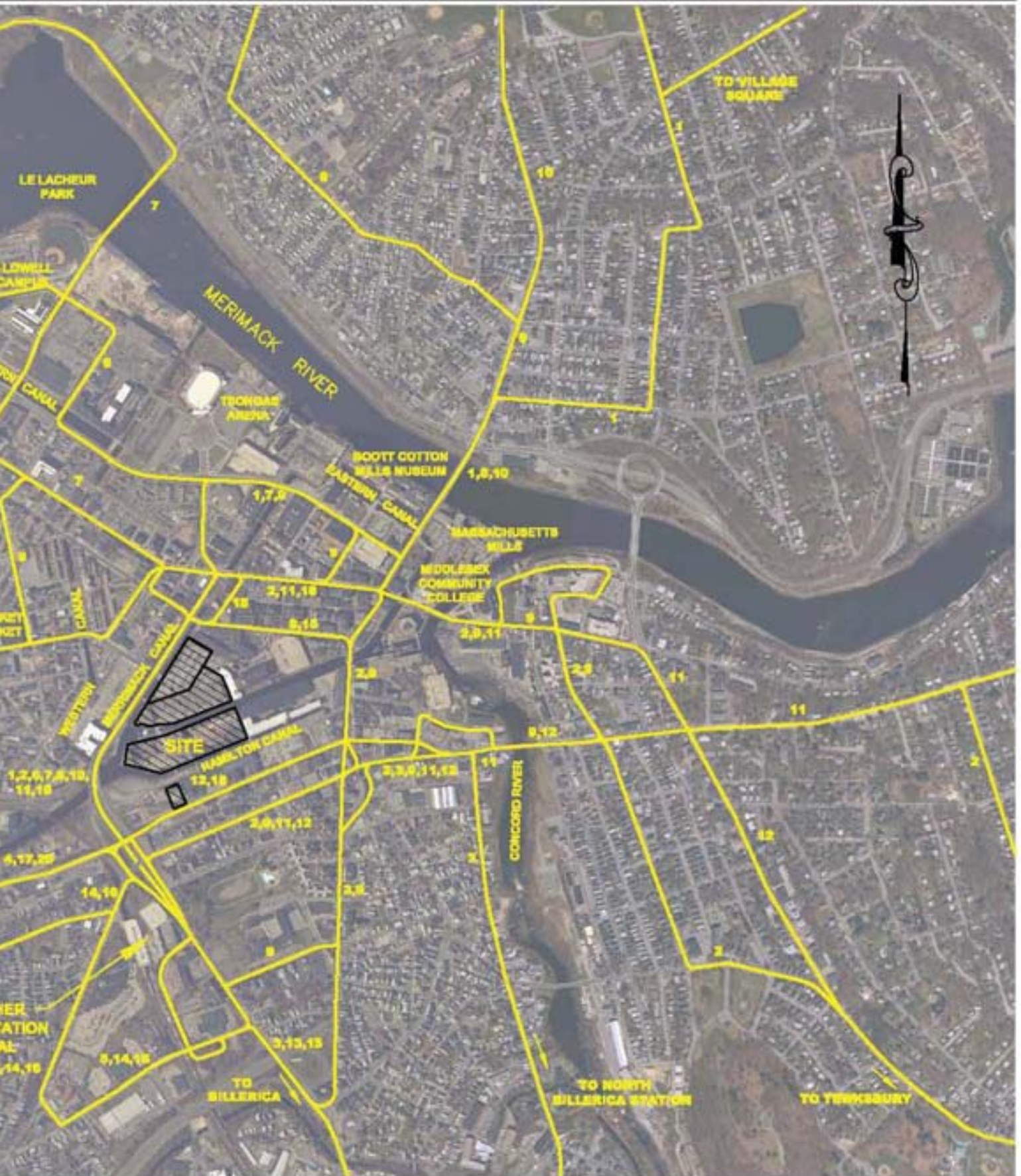


Figure 5-8
Existing LRTA Bus Routes
source: Woodland Design Group Inc.





Figure 5-9
Existing LNHP Trolley Route
source: Woodland Design Group Inc.



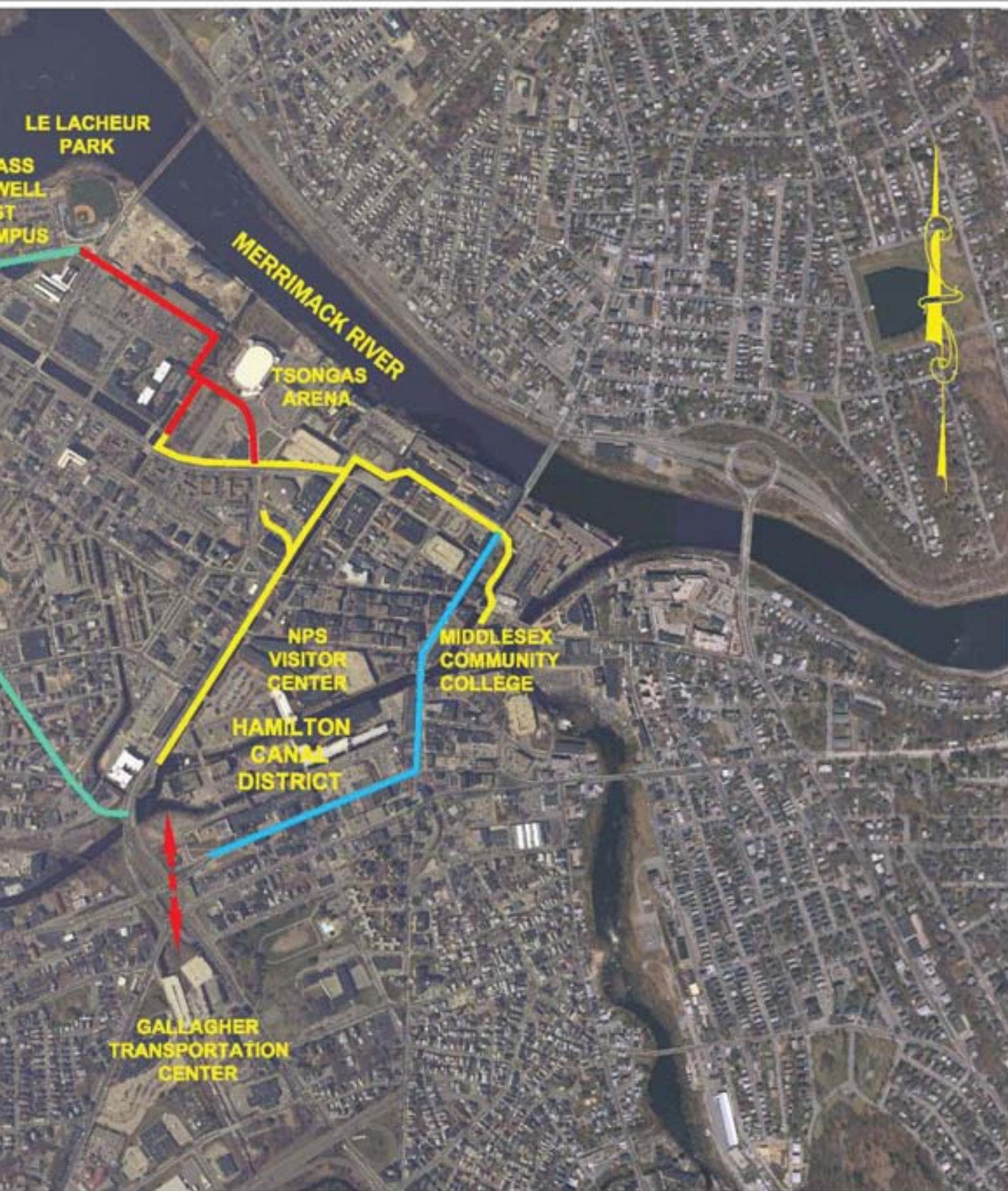
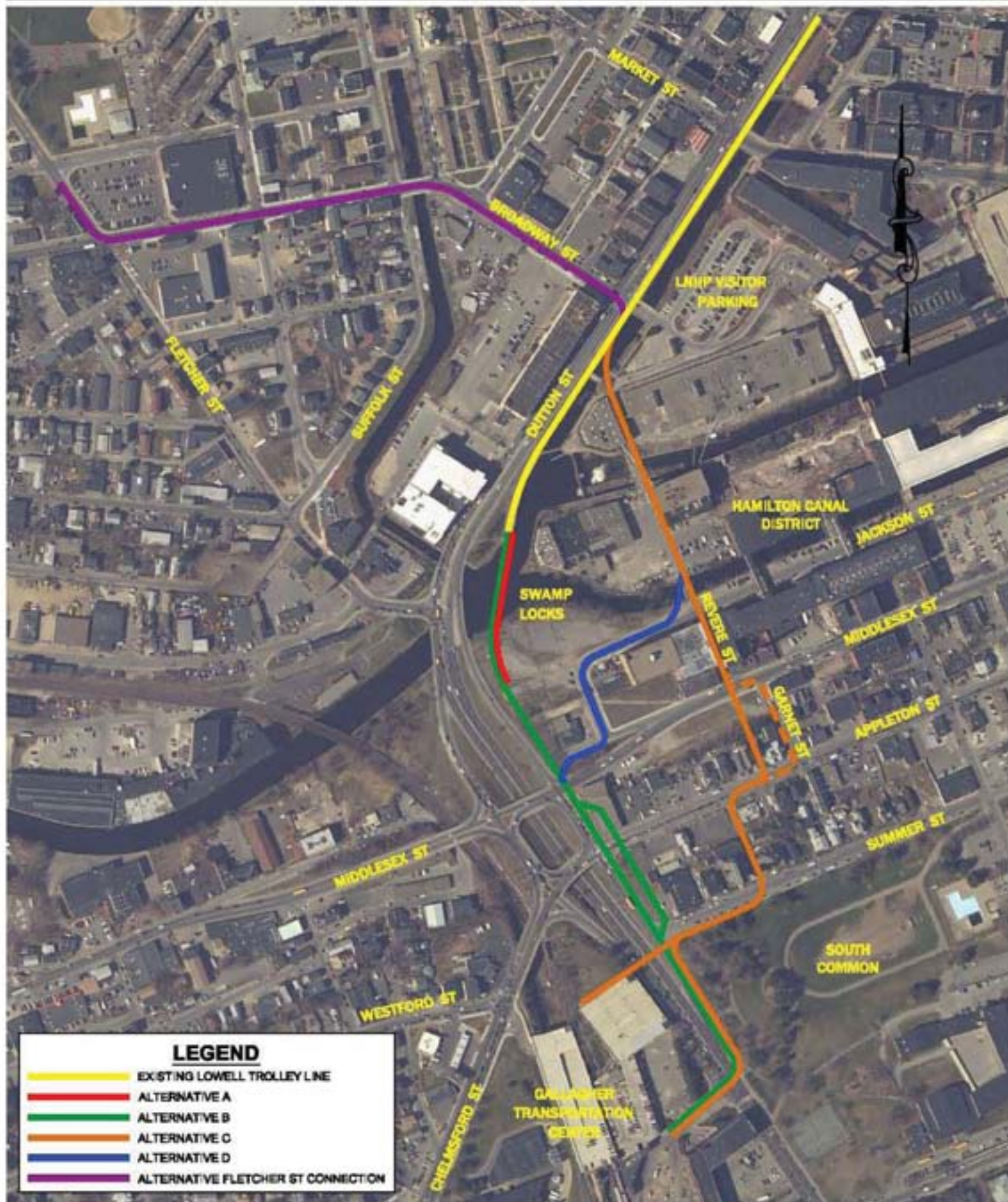


Figure 5-10
Proposed Trolley Route Extension
 source: Woodland Design Group Inc.

Hamilton Canal District



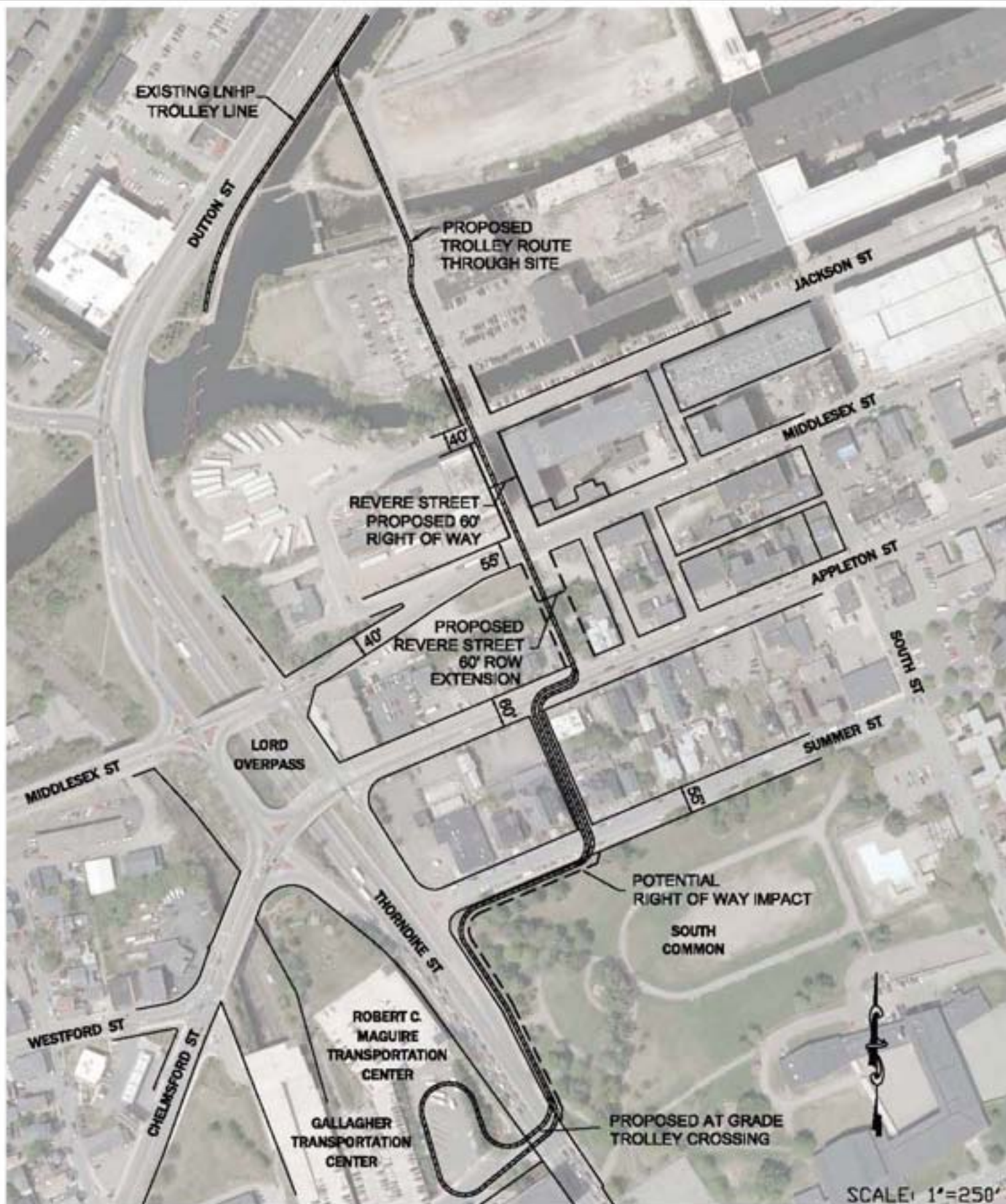


Figure S-11
 Potential Trolley Connection to
 Gallagher Transportation Center
 source: Woodland Design Group Inc.

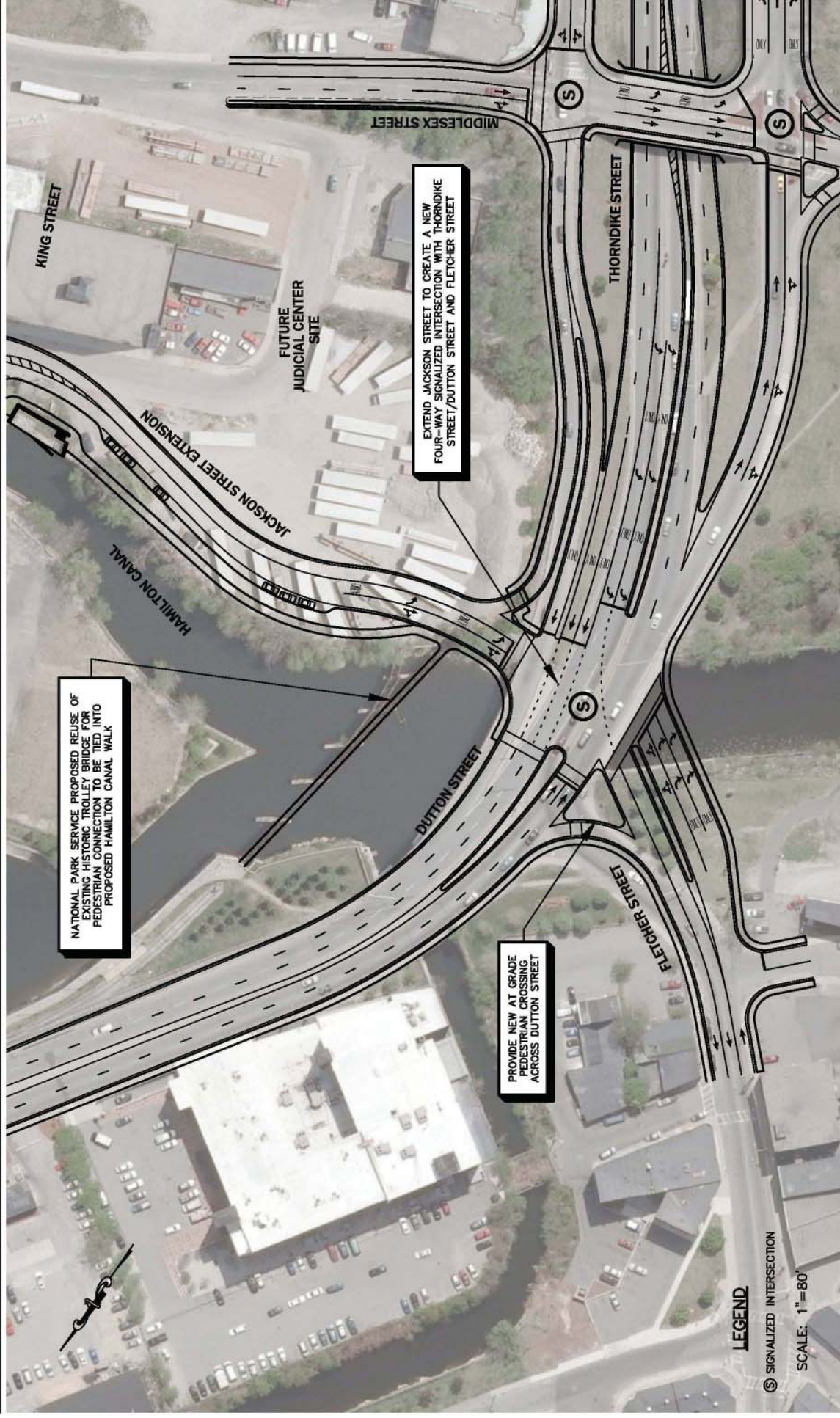


Figure 5-25

Conceptual Intersection Improvement
Thorndike St/Dutton St & Fletcher St/Jackson St
source: Woodland Design Group Inc.

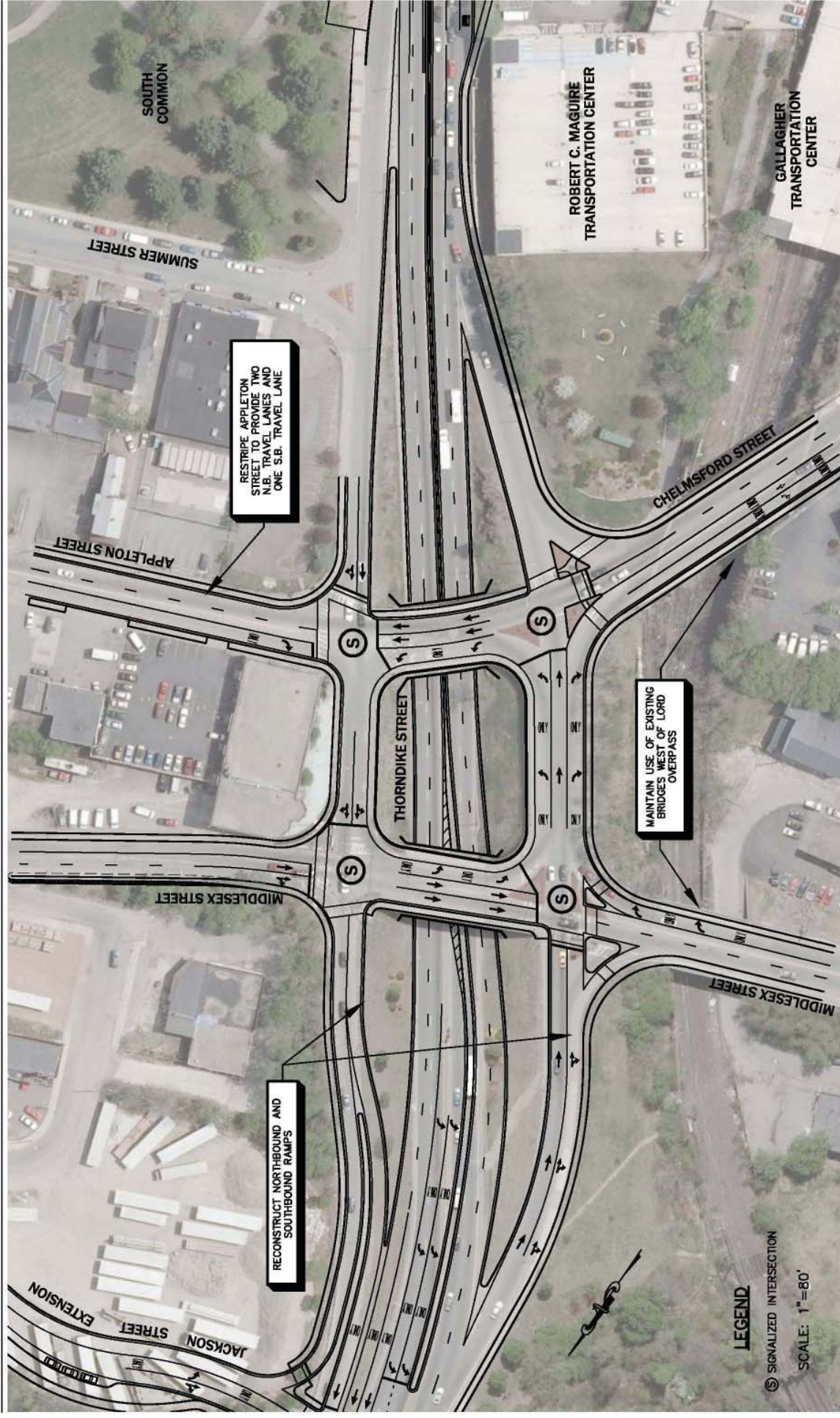
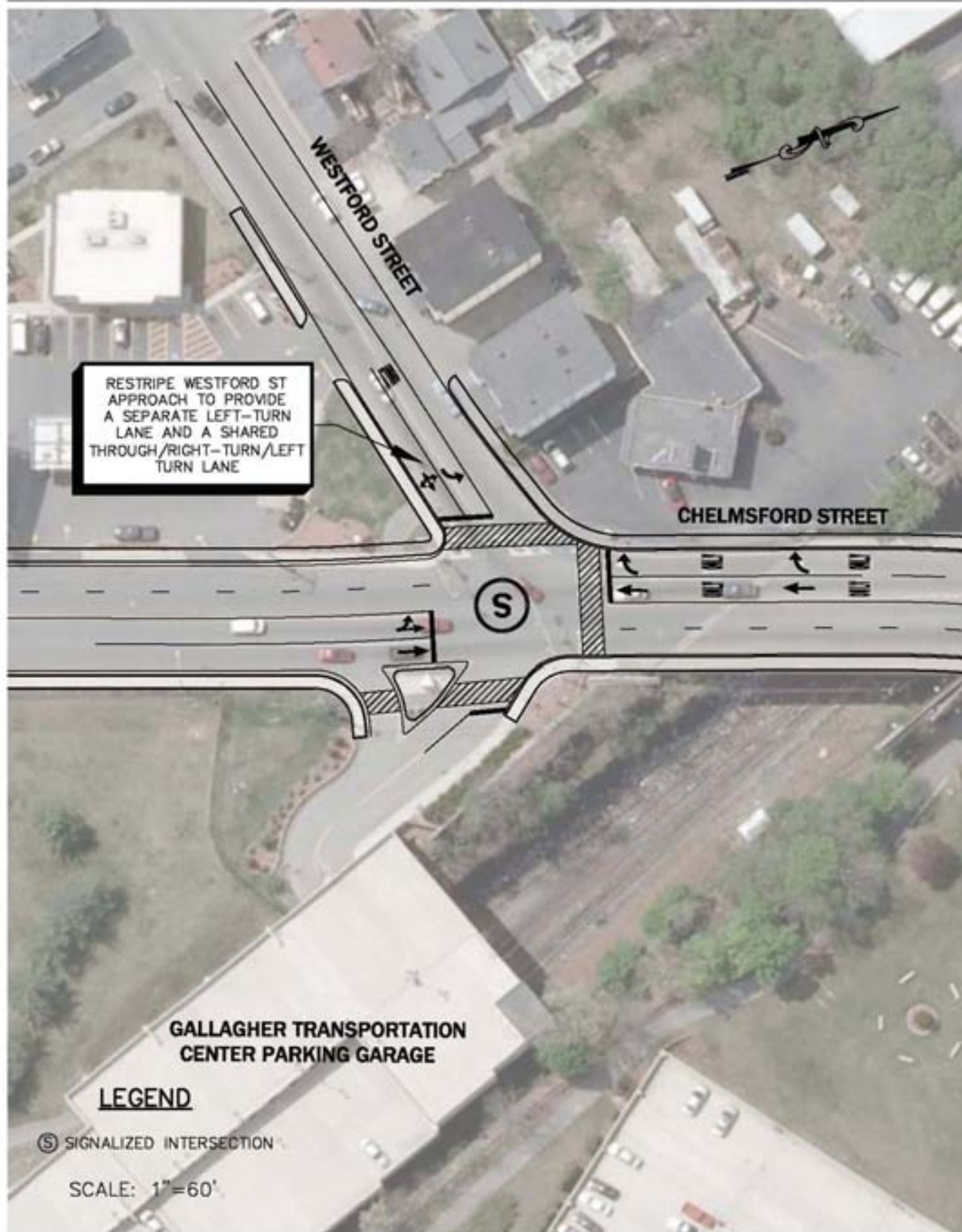
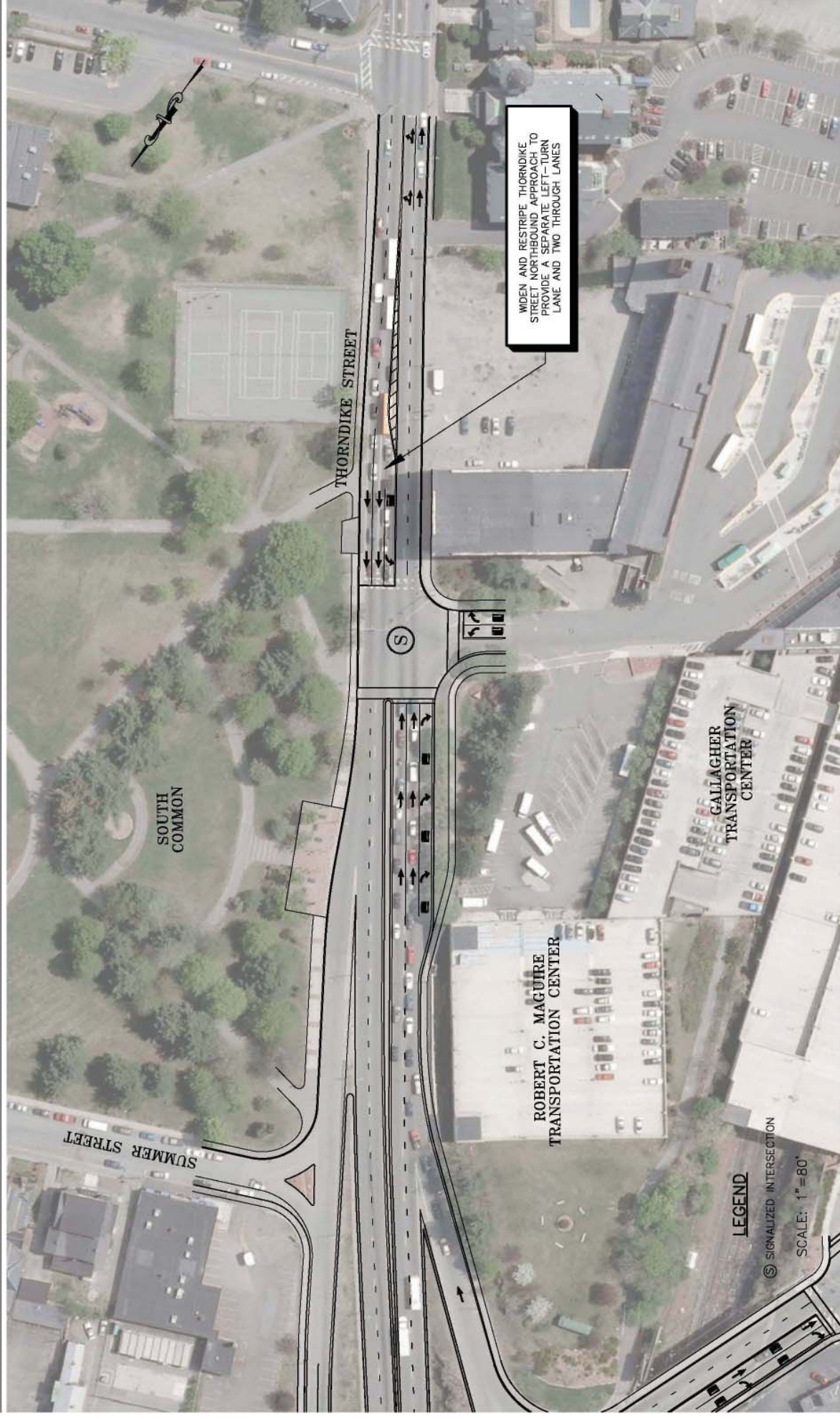
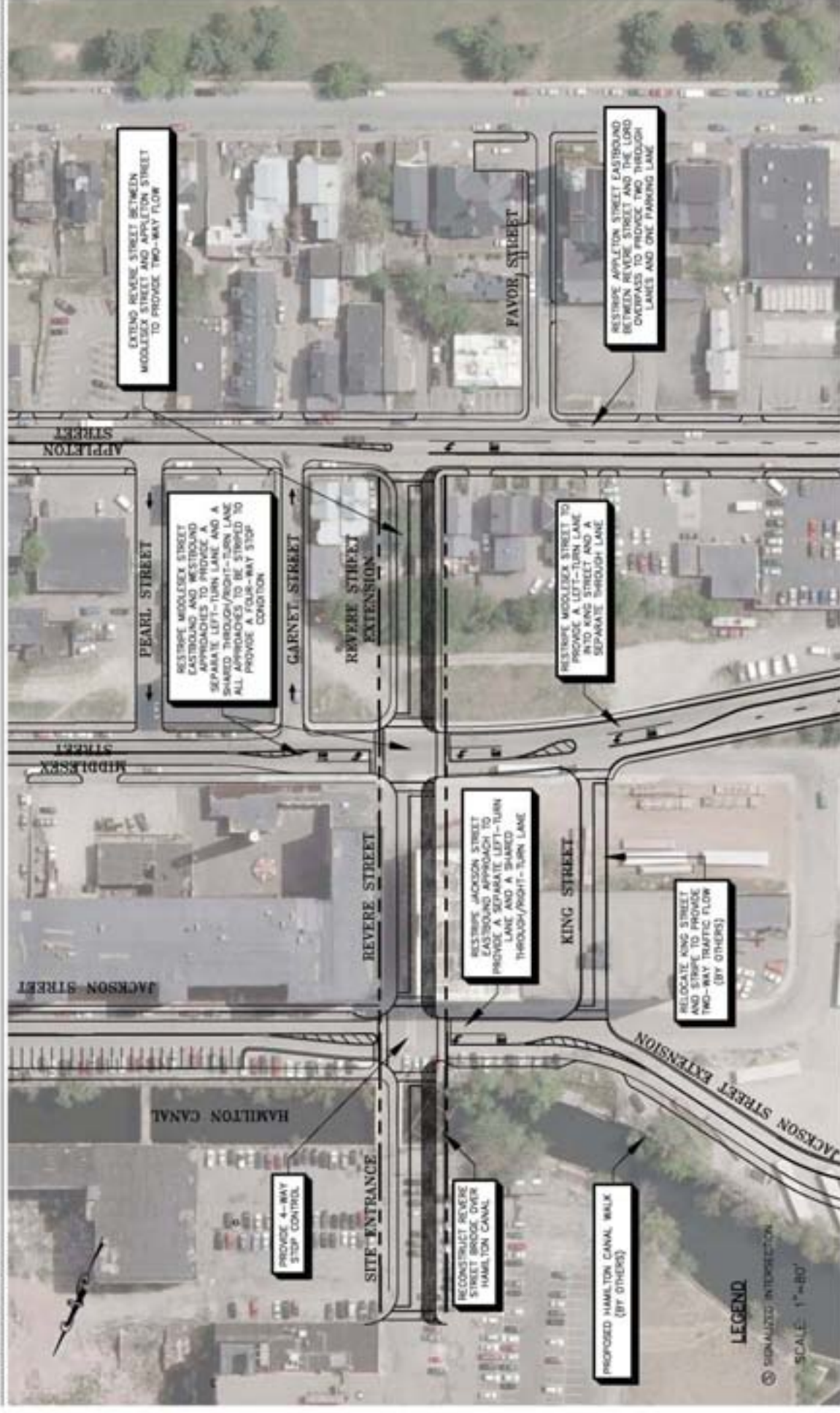


Figure 5-26
 Conceptual Intersection Improvement
 Lord Overpass
 source: Woodland Design Group Inc.







Hamilton Canal District
LOWELL, MASSACHUSETTS

Figure 5-30
Conceptual Intersection Improvement
Revere Street Extension
Source: Woodard Design Group Inc.

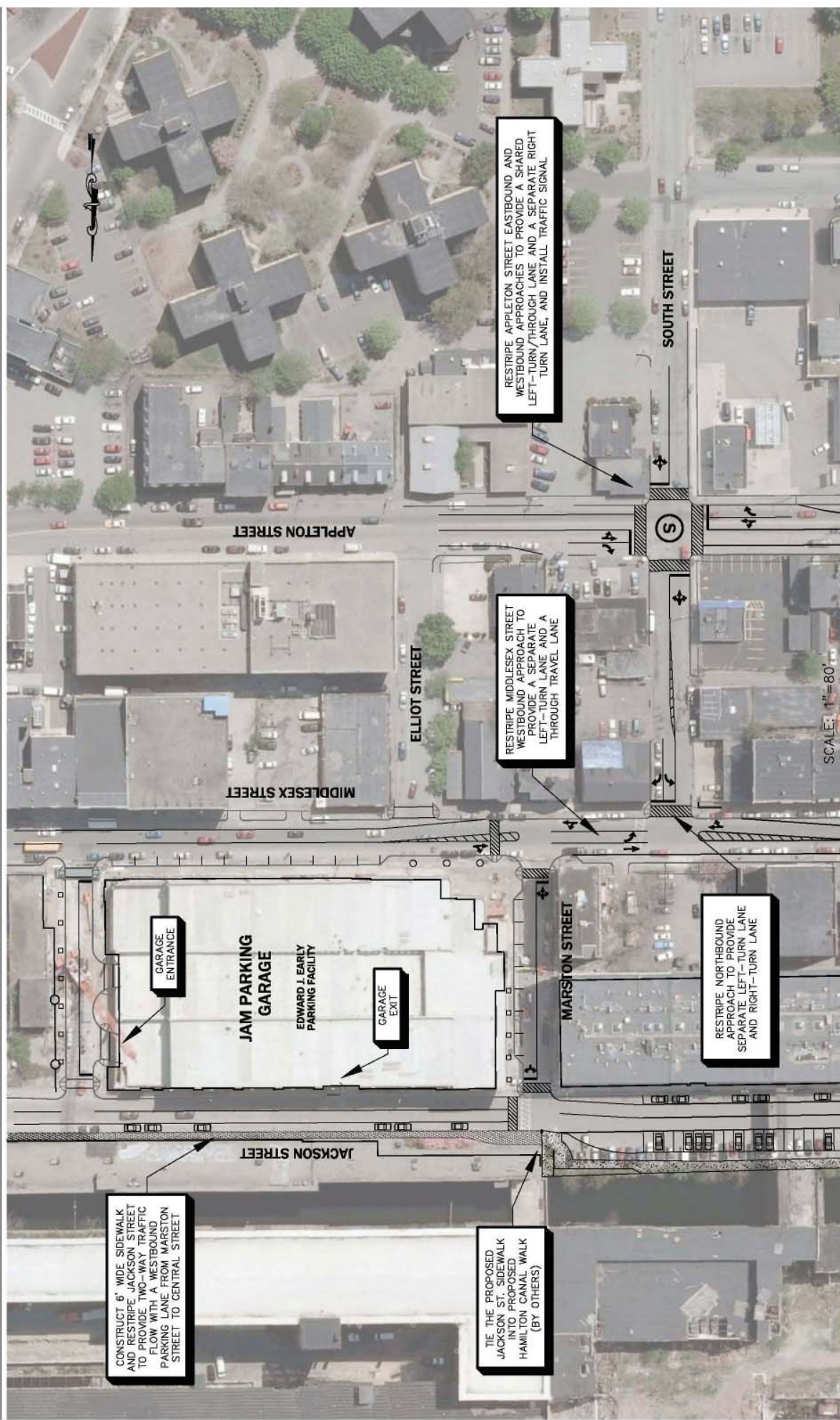
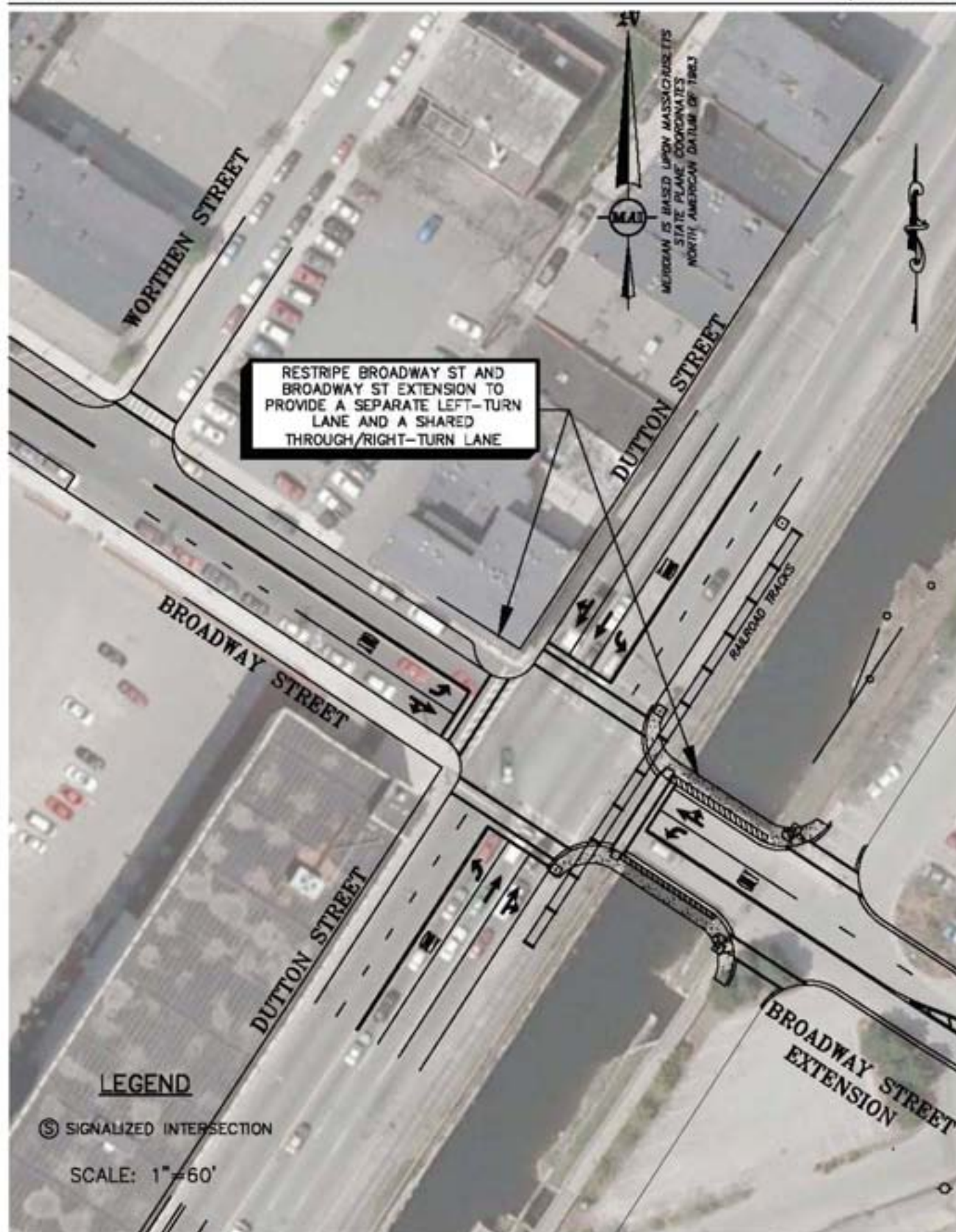
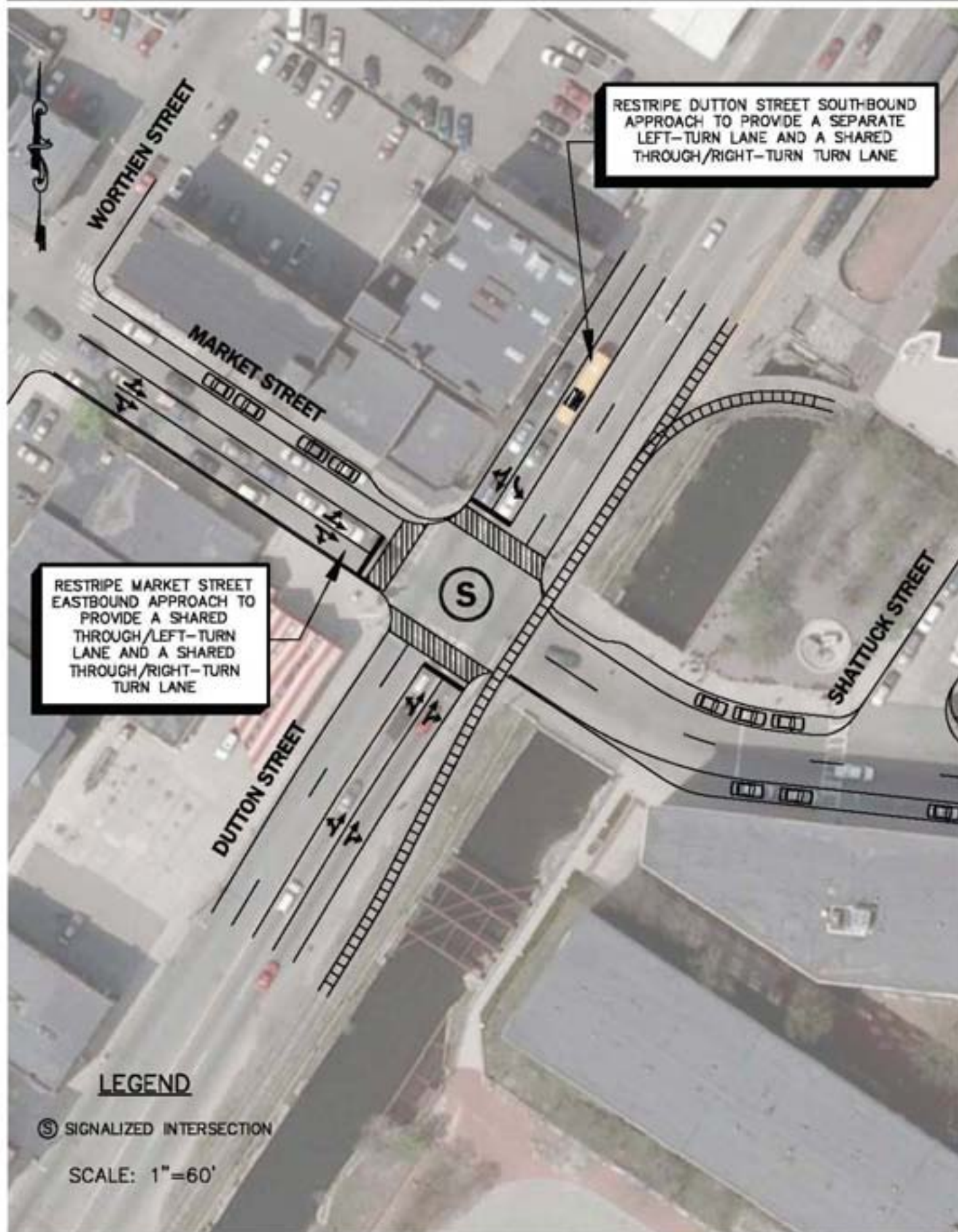
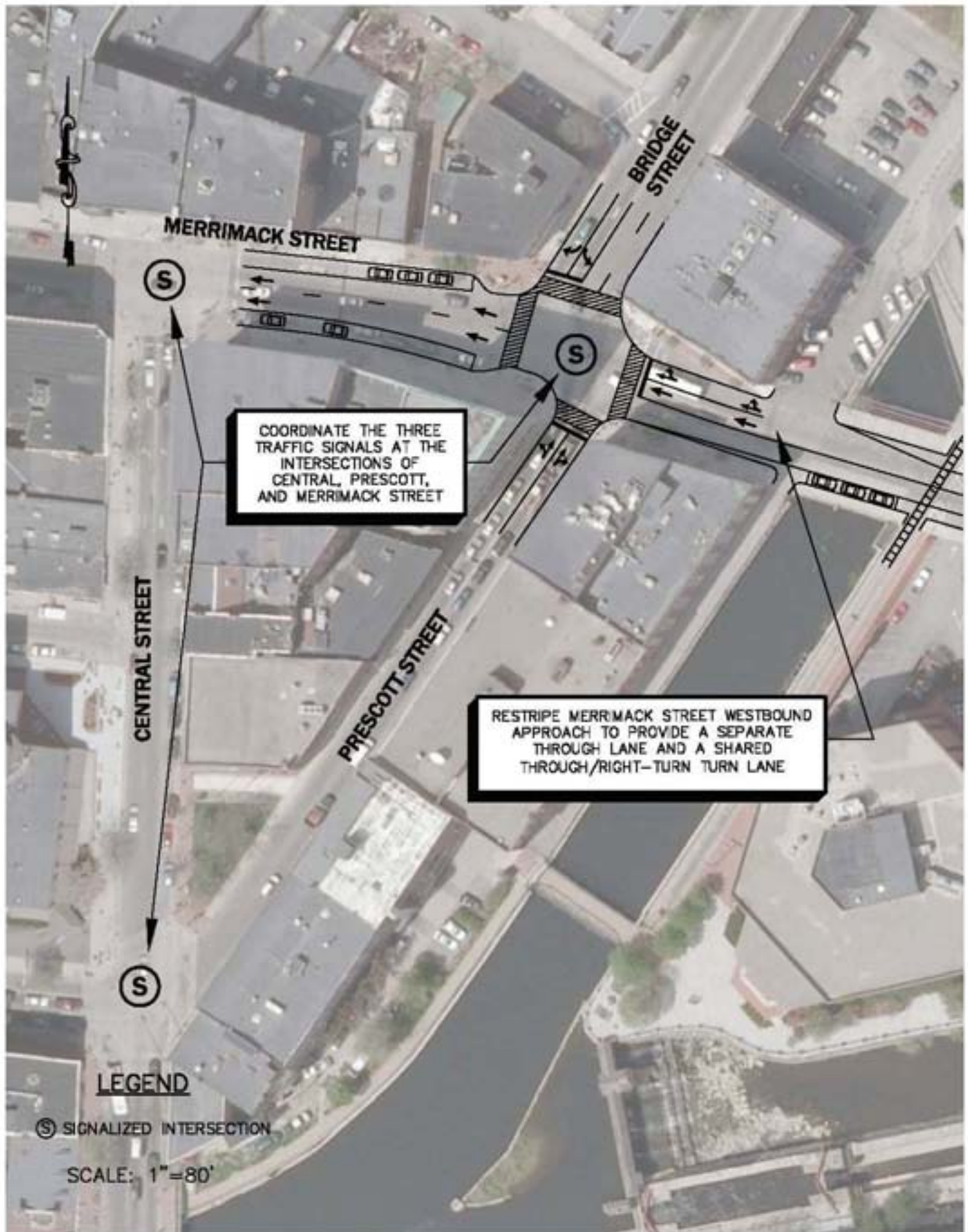


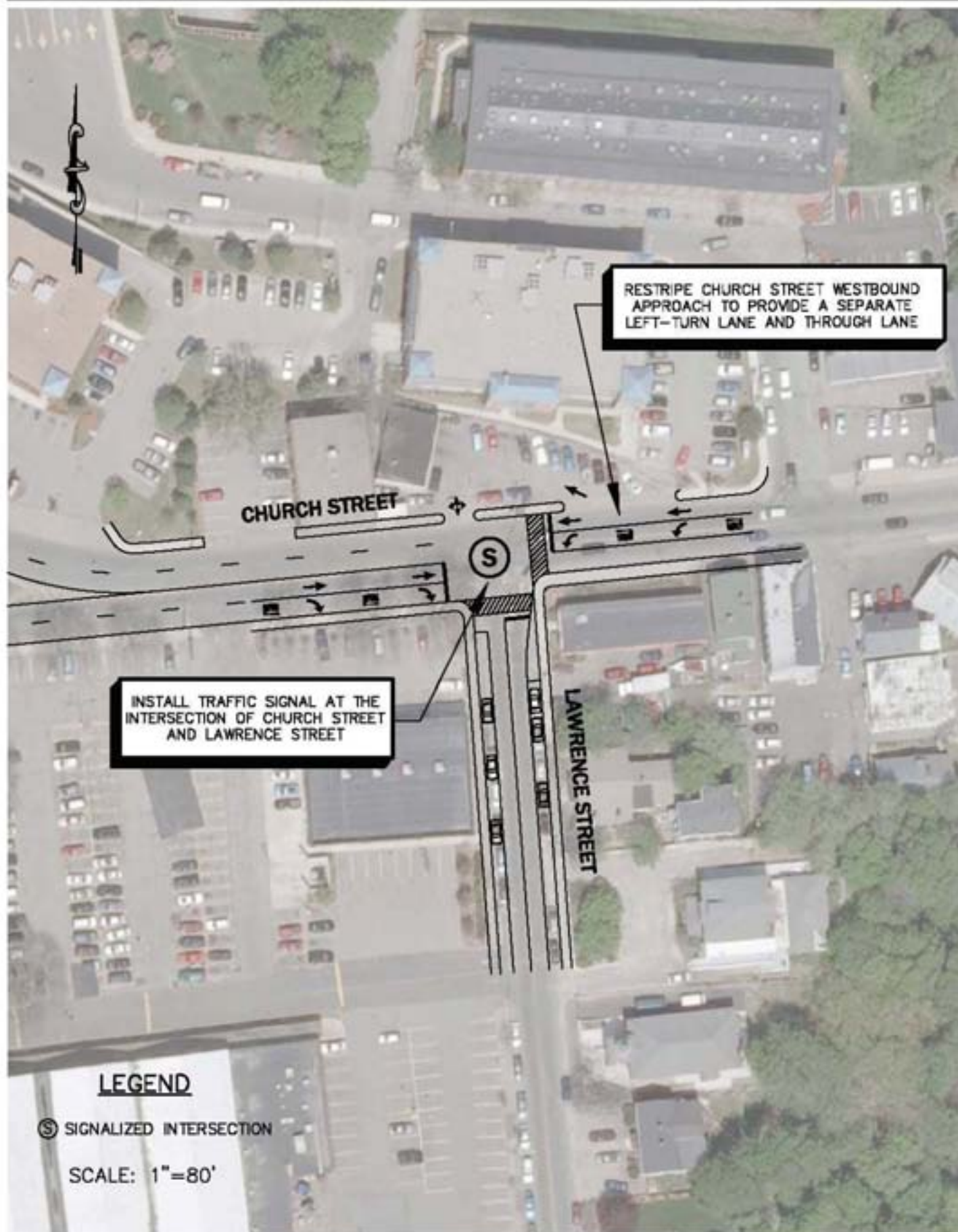
Figure 5-31
Conceptual Intersection Improvement
South Street Intersections
source: Woodland Design Group Inc.











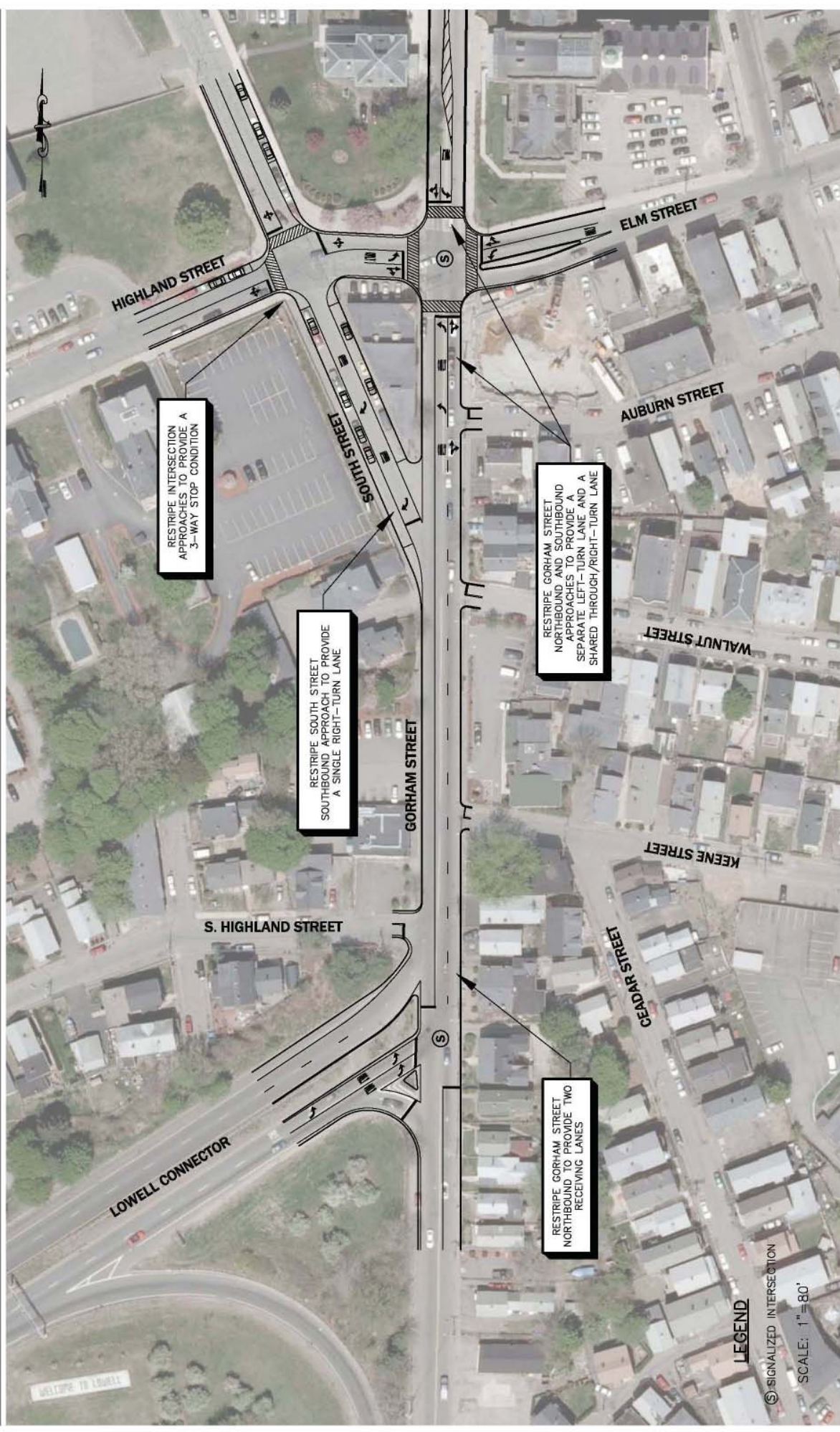
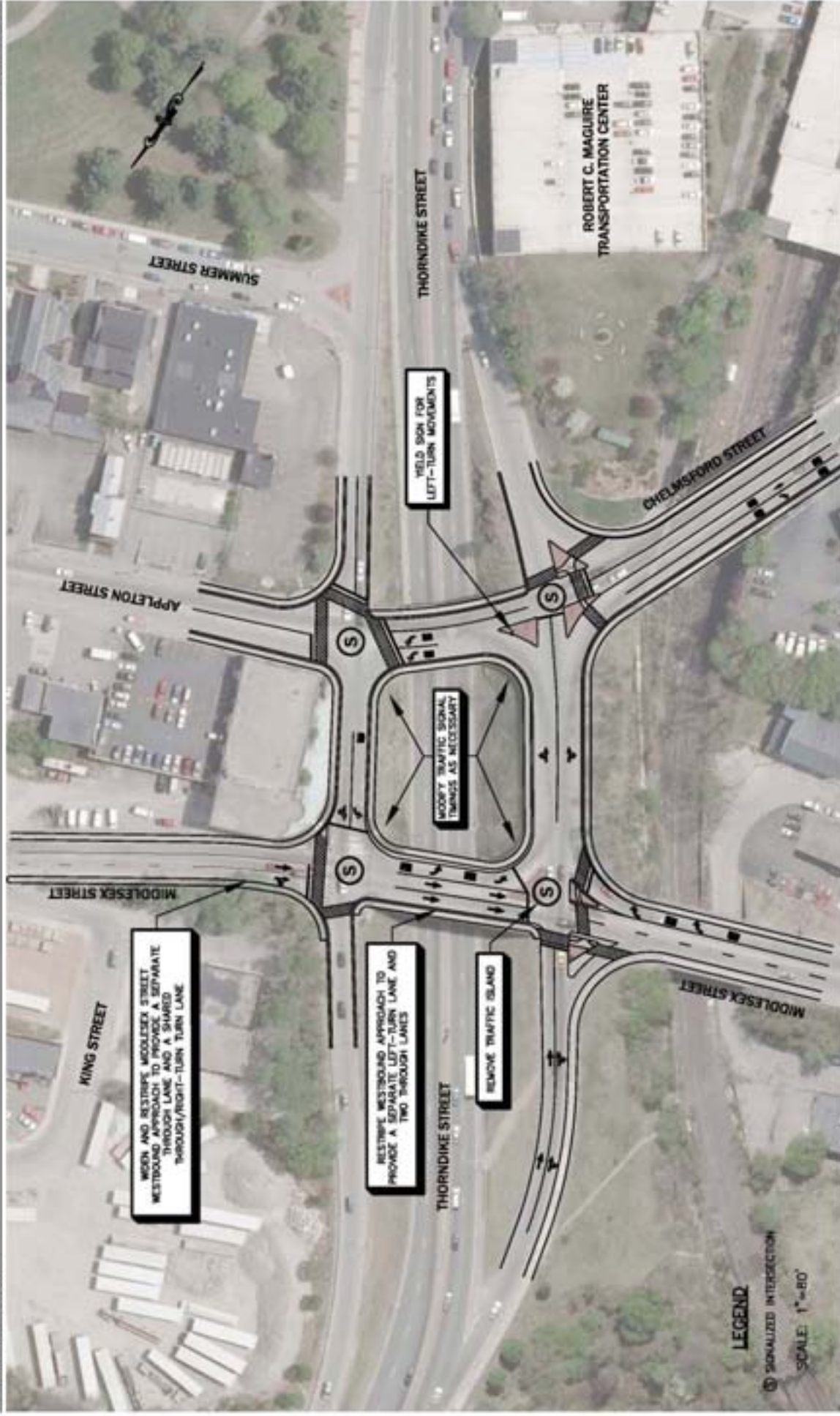


Figure 5-37
Conceptual Intersection Improvement
Lowell Connector & Gorham Street
source: Woodland Design Group Inc.





CIVIL ENGINEERING

The proposed redevelopment of the Hamilton Canal District will require entirely new utility infrastructure. Throughout the master planning and Charrette process, the team's civil engineering consultant, Meridian Associates, Inc, was evaluating the existing utility infrastructure within the HCD and within the public streets surrounding it. In addition Meridian has calculated the water, sewer, and storm drainage flows that are to be expected from this proposed Master Plan and proposed conceptual designs that can handle these flows. These preliminary utility calculations and concepts were described in the Expanded Environmental Notification Form and are being further developed for inclusion in the Draft Environmental Impact Report to be filed with the State in mid-October 2008.

The attached Conceptual Master Grading Plan forms the basis of the proposed on-site utility infrastructure. The existing topography of the site was created by the construction of the original canal system with the Upper Pawtucket, Hamilton and Merrimack Canals being set approximately 13 feet above the Lower Pawtucket Canal to provide the height differential required to create waterpower for the mills. As a result, the northern portion of the HCD slopes south toward the Lower Pawtucket Canal while the southern portion slopes north. The two existing entry points to the HCD, the bridge at Broadway and Dutton Streets across the Merrimack Canal and the bridge at Revere Street across the Hamilton Canal, establish the entry grades to the site. The new street system comprised of new streets C, D, E, and F connects these two entry points and essentially carries their higher grades through the site so that the proposed new bridge across the Lower Pawtucket is at approximately elevation 92. These basic street grades then form the basis for the conceptual drainage, sewer and water plans.

The existing storm drainage system on the HCD site is completely dependant on flowing into the canals. There is no separated storm drainage system surrounding the site and the City of Lowell is committed to eliminating all

combined flows to its sewage treatment plant. Therefore, all stormwater management must be mitigated on-site using Low Impact Development (LID) Best Management Practices (BMP's) before outletting to the canals. The stormwater management system for the HCD, as shown on the Conceptual Master Drainage Plan has been conceptually designed to include structural and non-structural BMPs to comply with DEP's Stormwater Management Policy. Water quality standards and total suspended solids (TSS) removal will be achieved through the use of deep sump catchbasins with gas trap hoods, vortechnic units, rain gardens (bio-retention areas as it is referred to under the LID design), green roofs, pervious pavers, and dry wells (subsurface infiltration facilities) for stormwater storage, attenuation, and recharge, resulting in a TSS removal rate for each basin meeting or exceeding the 80% requirement. The proposed stormwater management facilities will attenuate post-construction runoff rates and volumes will mimic but not exceed pre-construction conditions.

The Conceptual Master Sewer Main Plan illustrates how new sewer lines will be installed throughout the HCD. In the vicinity of the project site along Dutton and Jackson Streets, the City of Lowell owns, operates and maintains the sewer lines located in the public ways. From the intersection of Dutton and Fletcher Streets to Dutton and Market Streets, the existing sewer main varies in size from a 12"-18" cement pipe to a 30" x 20" brick box conduit. The sewer main in Jackson Street consists of a 52" x 35" brick oval conduit. A sewer main currently runs through the site along the Lower Pawtucket Canal attached to the existing canal wall (this sewer line is not considered functional). Each of the existing sewer mains conveys wastewater to the Lowell Regional Wastewater Utility Treatment Plant. After treatment, plant effluent is discharged to the Merrimack River. According to staff at the Wastewater Utility Plant, the plant is designed for a capacity of 62.8 million gallons a day (mgd). The average daily use is approximately 40 mgd.

Existing sewer mains within the project locus are not considered functional and will be abandoned. A new collection system from proposed buildings to the City of Lowell system will be established. It is anticipated that proposed buildings south of the Lower Pawtucket Canal will be directed by gravity sewer lines to a sewer lift station located at the low point of this portion of site and pumped to the existing sewer main in Jackson Street. The approximate length of gravity sewer and force main for this section is 2,000 feet. Proposed sewage flow from buildings north of the Lower Pawtucket Canal will connect to another proposed sewer lift station on the north side of the Canal at the low point on that portion of the site and pumped to the existing sewer main in Dutton Street. The approximate length of gravity sewer and force main for this section is 1,500 feet. As part of Phase I, the sewer lift station located south of the Lower Pawtucket Canal along with associated gravity sewer lines and proposed force main to Jackson Street will be constructed. It is assumed that the gravity sewer pump station and force main will be owned by the City.

The proposed mixed-use buildings will house office space, retail space, residences, restaurants, and possibly a theater or gallery. Based on design flows as provided by the American Water Works Association, August 2003, for retail office and restaurant flows, and a survey of actual sewage flow rates from Trinity's Maverick Landing project utilizing low flow fixtures for residential flows, the project would be expected to generate approximately 97,320 gallons per day (gpd) of wastewater. Phase I of the project will generate approximately 20,622 gpd of wastewater. The City of Lowell Wastewater Utility Department has confirmed that capacity in the sewer system is adequate to handle new wastewater flow from the development of this project.

The amount of wastewater flow directed to the new lift station proposed to the north of the Lower Pawtucket Canal is approximately 22,460 gpd. Wastewater flow directed to the new lift station south of the Lower Pawtucket Canal and into Jackson Street is approximately 74,865 gpd.

The Conceptual Master Water Main Plan illustrates how new water service mains will be installed within the

HCD and tied into the City's existing distribution system.

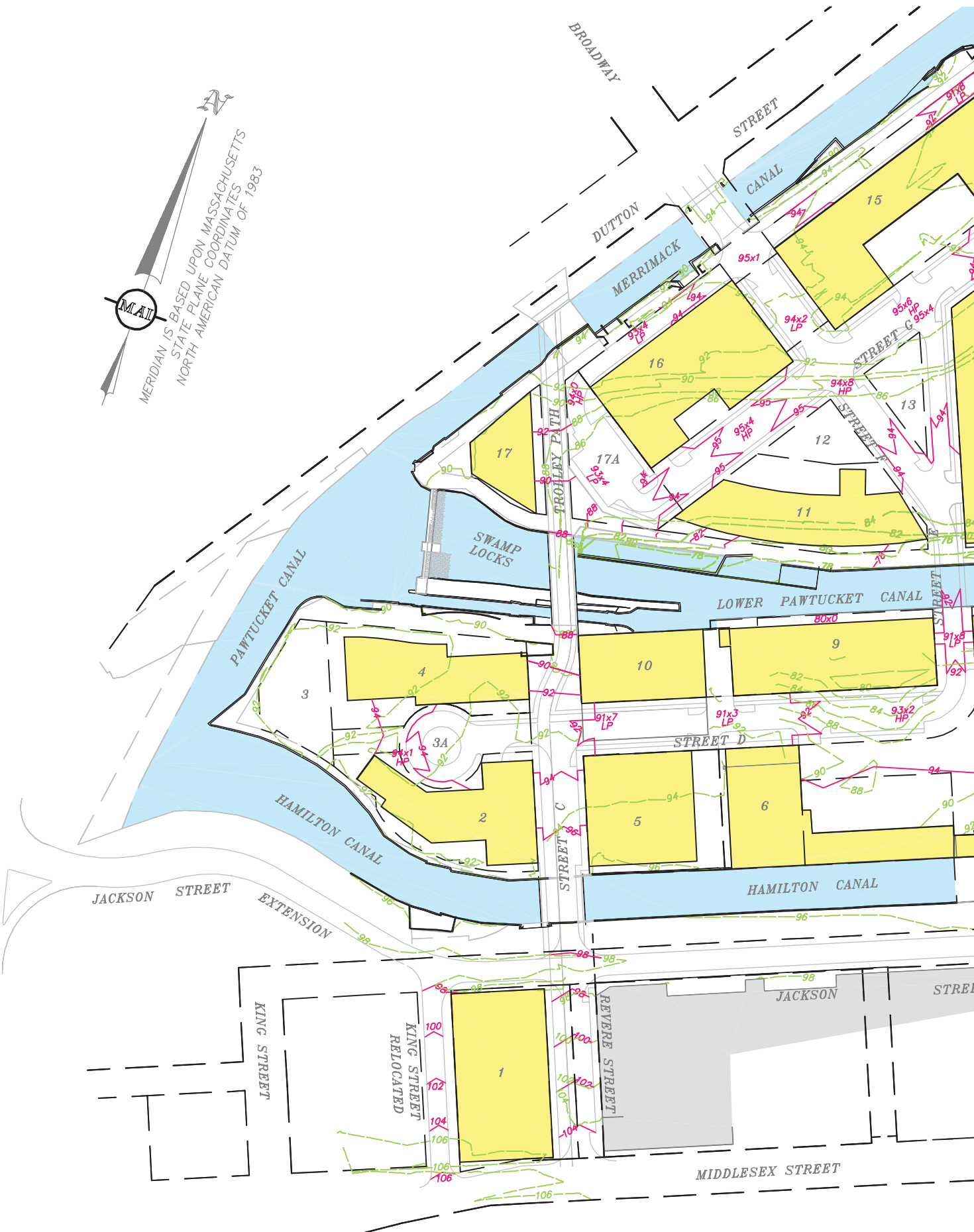
A 16" water main is located within Dutton Street along the northwest side of the locus. A 16" water main is located within the length of Jackson Street to the southeast of the locus. A 12" water main enters the site at the intersection of Jackson and Revere Street and runs within a bridge across the Hamilton Canal where the main ends. The City of Lowell owns and maintains the water mains in these streets. Based on conversations with Lowell Regional Water Utility Department, there is no water flow being utilized on the locus properties. Existing water services within the project locus will be abandoned and replaced during construction

The development will include a new public way starting at Revere Street and traversing through the site to connect with Dutton Street. The existing water main on the locus property will be connected into a new water main traversed along the new public way. This will create a looped water main from Jackson Street to Dutton Street of approximately 1,355 feet. Phase I will include construction of 730± feet of new water main from Revere Street and looping back out to Jackson Street through Parcel 7. The water main will service the new residents and offices on Parcels 6, 7, & 10 constructed as part of Phase I. The proposed public way and extension of the water main to Dutton Street will be constructed after the completion of Phase I. The appropriate size of the water main will be determined during the design phase of the project. Each of the proposed and/or rehabilitated buildings on the site will incorporate new domestic water and fire protection service lines. The new water lines will be serviced from the new main looping through the site.

The estimated water consumption for all of the buildings within the proposed project is 107,050± gallons per day (gpd). This amount is based on 110% of the estimated sewage flow of 97,320± gpd. The estimated water consumption for the completion of Phase I is 22,680± gpd and is also 110% of the projected sewer flows. Based on discussions with the Lowell Regional Water Utility, the City has adequate water capacity to handle the additional development demand. The project will be designed with water conservation measures as part of the sustainable design approach.

***GRADING AND
UTILITY PLANS***

MAT
MERIDIAN IS BASED UPON MASSACHUSETTS
STATE PLANE COORDINATES
NORTH AMERICAN DATUM OF 1983





- 95— PROPOSED CONTOUR
- - -86- - - EXISTING CONTOUR
- 95x6 PROPOSED SPOT ELEVATION
- 9 PARCEL NUMBER
- HP HIGH POINT
- LP LOW POINT
- EXISTING BUILDING
- PROPOSED BUILDING
- WATER CANAL

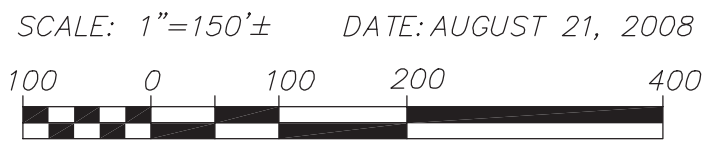


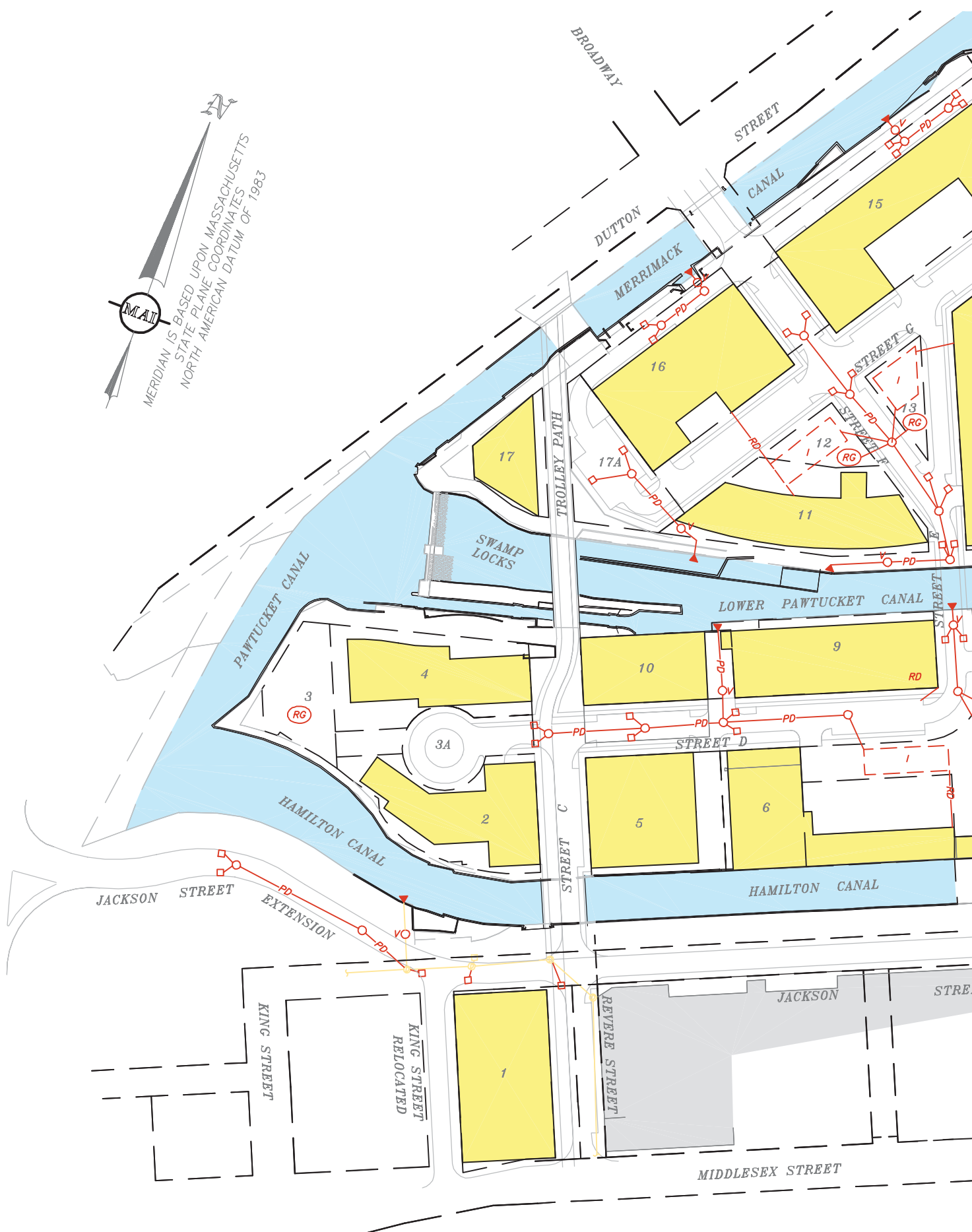
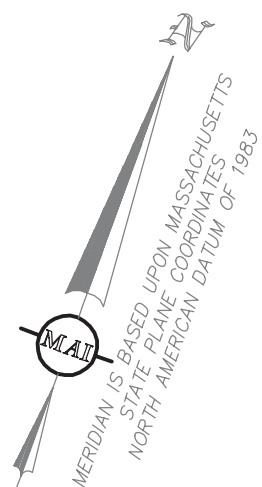
**MERIDIAN
ASSOCIATES**

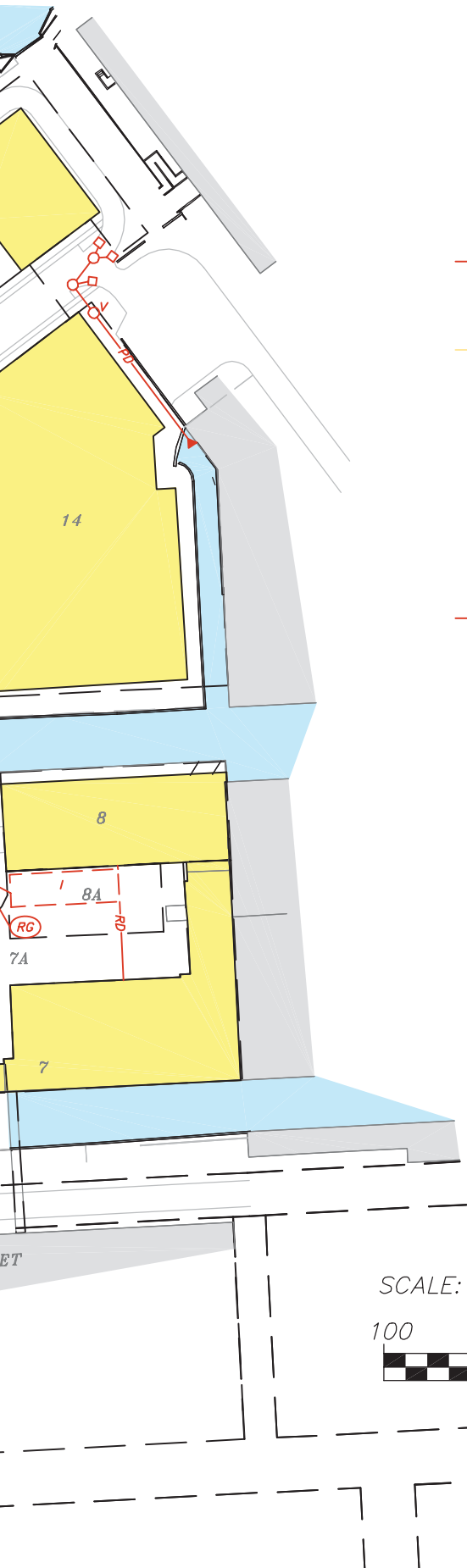
152 CONANT STREET BEVERLY,
MASSACHUSETTS 01915
TELEPHONE: (978) 299-0447
WWW.MERIDIANASSOC.COM

69 MILK STREET, SUITE 302
WESTBOROUGH, MASSACHUSETTS 01581
TELEPHONE: (508) 871-7030

CONCEPTUAL
MASTER GRADING PLAN
LOCATED IN
LOWELL, MASSACHUSETTS
PREPARED FOR
TRINITY FINANCIAL, INC.







- RG PROPOSED RAIN GARDEN
- V PROPOSED VORTECHNICS UNIT
- PROPOSED DRAIN MANHOLE
- PROPOSED CATCHBASIN
- PD — PROPOSED STORM DRAIN
- I POTENTIAL INFILTRATION SYSTEM
- D — EXISTING STORM DRAIN
- 9 PARCEL NUMBER
- EXISTING BUILDING
- PROPOSED BUILDING
- WATER CANAL
- ⊙ EXISTING DRAIN MANHOLE
- RD — PROPOSED ROOF DRAIN
- ◀ PROPOSED OUTFALL

SCALE: 1"=150'± DATE: AUGUST 21, 2008

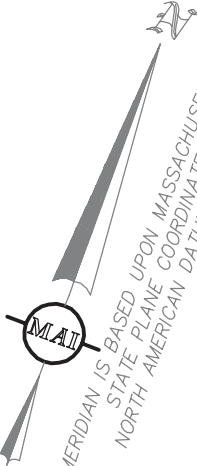


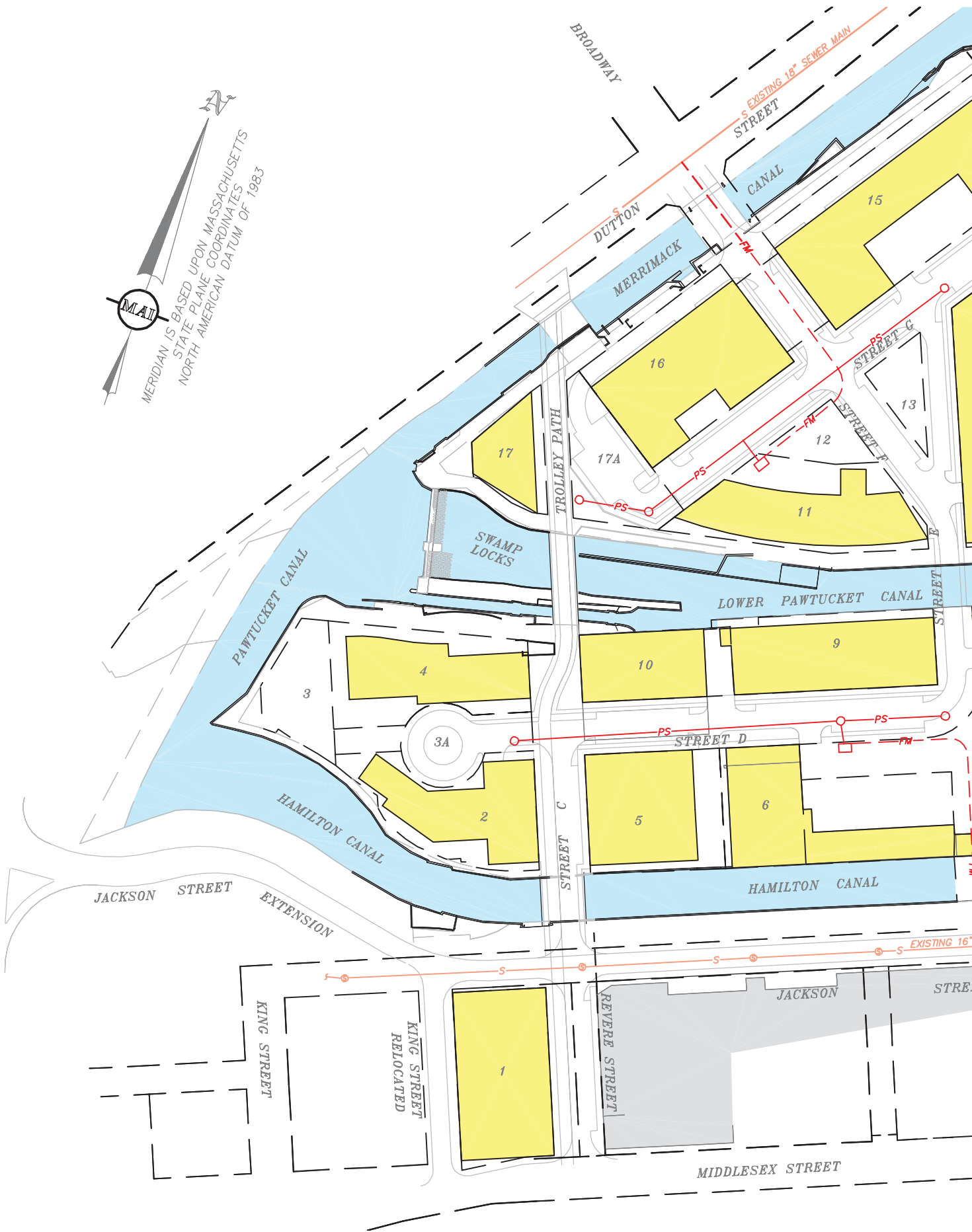
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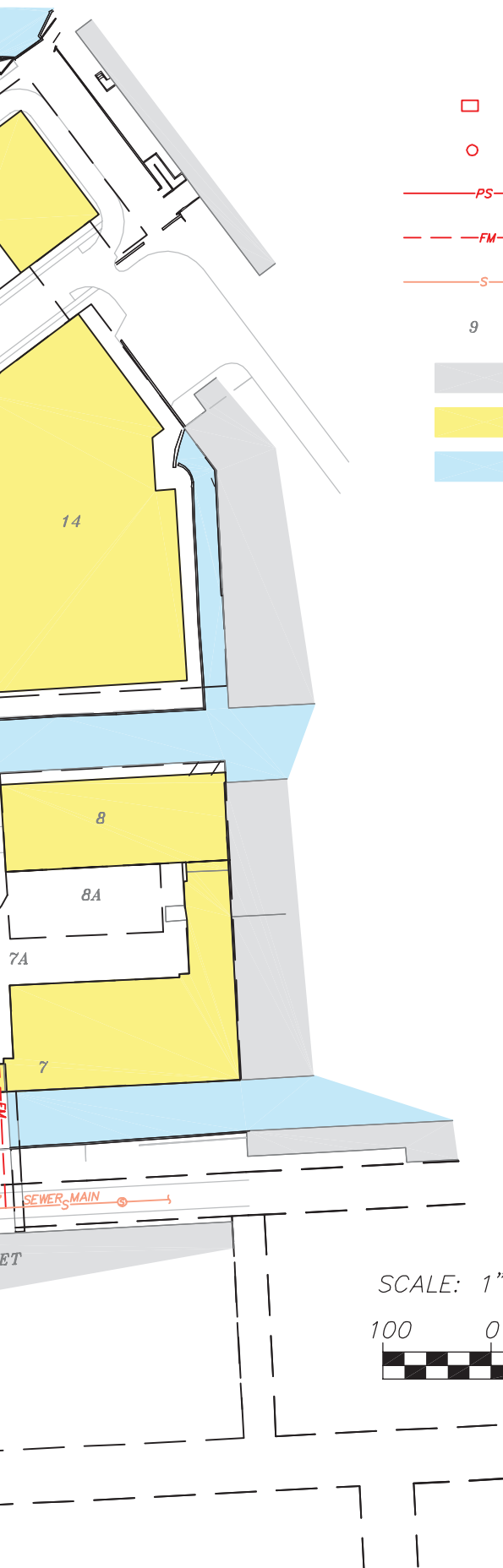
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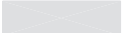


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CONCEPTUAL
MASTER DRAINAGE PLAN
LOCATED IN
LOWELL, MASSACHUSETTS
PREPARED FOR
TRINITY FINANCIAL, INC.


MERIDIAN IS BASED UPON MASSACHUSETTS
STATE PLANE COORDINATES
NORTH AMERICAN DATUM OF 1983





-  PROPOSED SEWER LIFT STATION
-  PROPOSED SEWER MANHOLE
-  PROPOSED GRAVITY SEWER MAIN
-  PROPOSED SEWER FORCE MAIN
-  EXISTING SEWER
-  EXISTING BUILDING
-  PROPOSED BUILDING
-  WATER CANAL

SCALE: 1"=150'± DATE: AUGUST 21, 2008

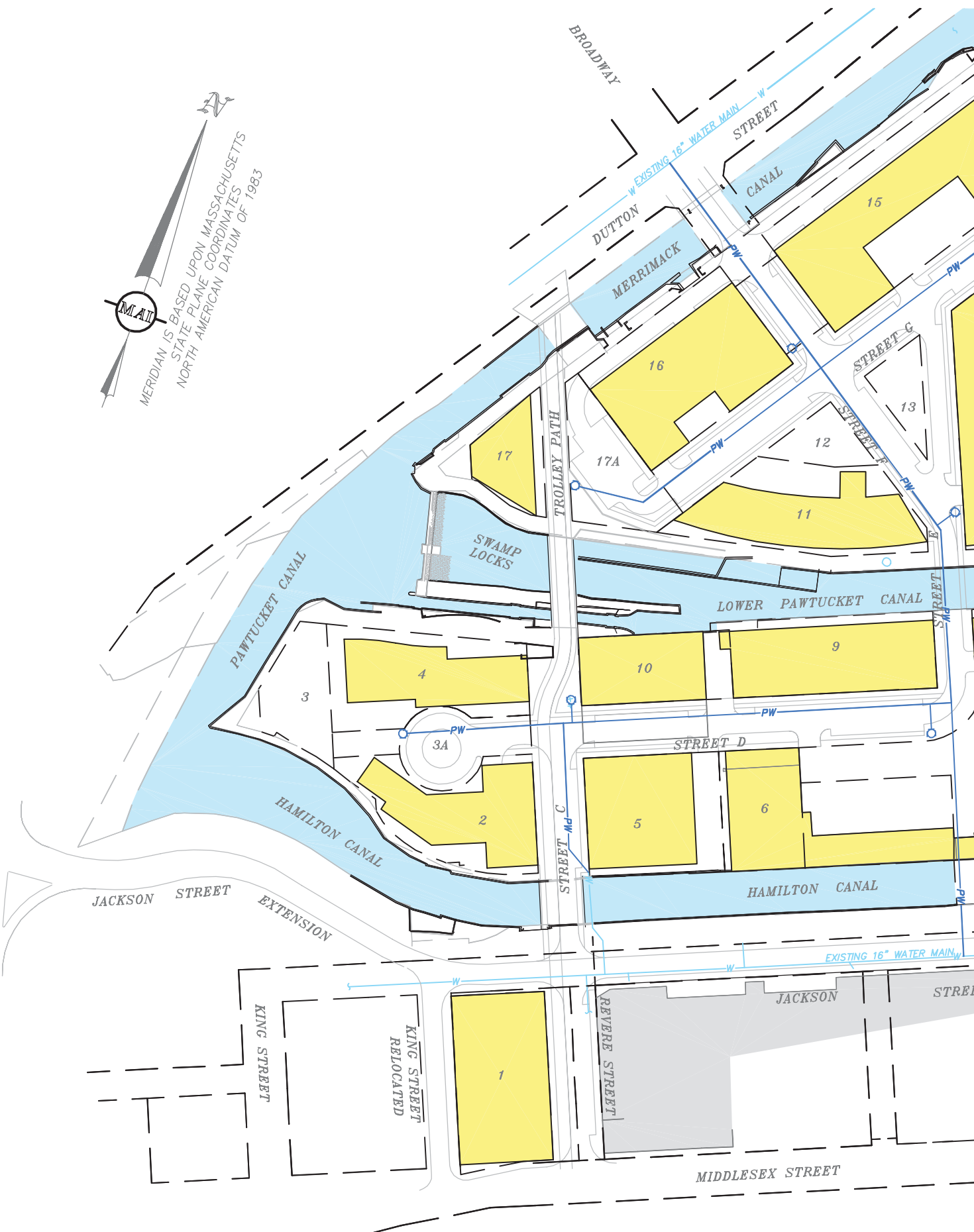


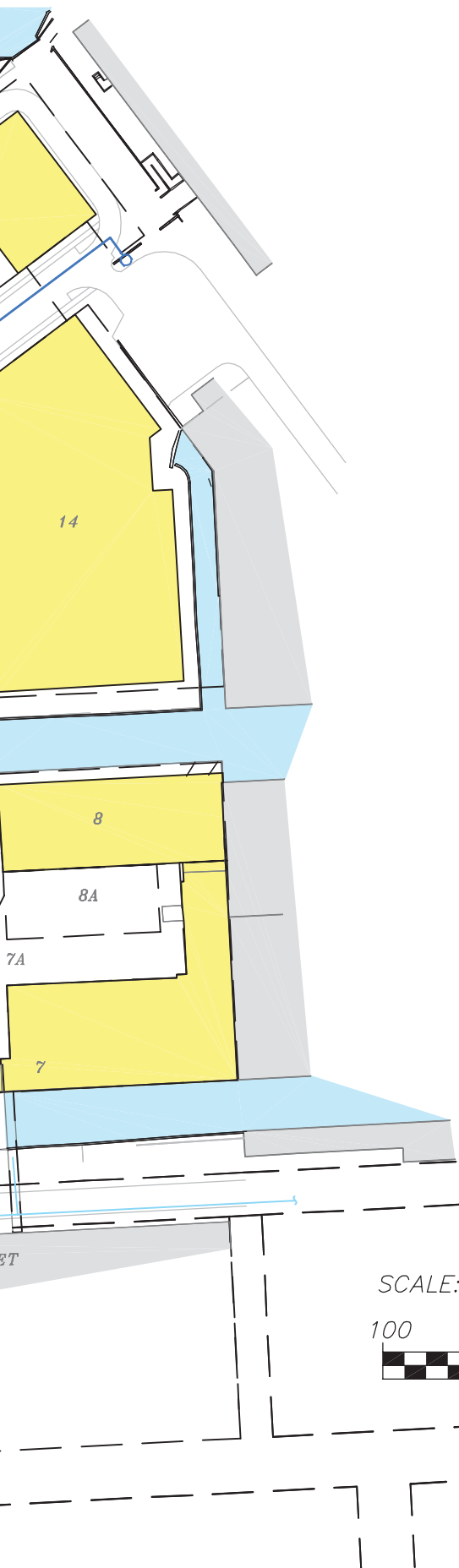
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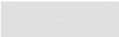


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**CONCEPTUAL
MASTER SEWER MAIN PLAN
LOCATED IN
LOWELL, MASSACHUSETTS
PREPARED FOR
TRINITY FINANCIAL, INC.**





-  PROPOSED HYDRANT
-  PROPOSED WATER MAIN
-  EXISTING WATER MAIN
-  PARCEL NUMBER
-  EXISTING BUILDING
-  PROPOSED BUILDING
-  WATER CANAL



**MERIDIAN
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**CONCEPTUAL
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